The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Congress of Chemical Industry

THE Society of Chemical Industry and all who are co-operating with them are to be congratulated on the scale and the spirit in which they are planning for the forthcoming annual meeting in London. A comprehensive and attractive programme has been arranged, and one is at once struck by the number of topics chosen that have an immediate bearing on current industrial problems. A new step of some interest is the appointment of a publicity committee in connection with the meetings. While nobody desires to see our great scientific societies indulging in noisy trumpeting, there are quiet and dignified ways in which their work may be interpreted to the lay public, as, indeed, it ought to be if it is to exercise its proper influence and secure its legitimate public recognition. The general press, which has to report highly technical matters in language the lay reader is able to follow, appreciates expert assistance in this rather difficult task, and the organisations that make special arrangements for enabling the press to collect the information it desires as easily as possible usually get their reward in what is called "a good press." The experiment is an interesting one, and we have no doubt will justify itself.

The annual meeting this year begins in London on Monday, July 19, and continues throughout the week. It will take the extended form of a Congress of Chemists, at which not only British, but international chemical interests will be strongly represented. It promises to be a convincing demonstration of the great progress made in chemical research, technology, engineering, and industry since the war, and to show how rapidly Great Britain is becoming known as a productive as well as a distributing nation in all phases of chemistry. The King has granted his patronage to the Congress, and the Duke of York and the Lord Mayor will be present at the delivery by Earl Balfour of the third Messel Memorial Lecture on the opening day at the Mansion House.

The programme for the week includes, in addition to business meetings and social functions, an exhibition of British chemical plant, to be opened by Sir Max Muspratt (President of the Federation of British Industries), at the Central Hall, Westminster, and a laboratory apparatus exhibition at the Institute of Chemistry; the annual meeting of the recently established Institution of Chemical Engineers, at which Sir Frederic Nathan will deliver his presidential address on "Industrial Efficiency and the Elimination of Waste"; an important symposium on the problem of "Corrosion," to which leading chemical engineers, metallurgists, and plant manufacturers will contribute; a conference of the Bio-Chemical and other societies on "the scientific and industrial problems presented by the Hormones (the natural drugs of the body)," over which Sir Alfred Mond will preside; and a general discussion on the proposal to establish a national chemical headquarters in London, to be known as "Chemistry House." Other conferences are being arranged on "Power Alcohol," by chemical engineers and petroleum technologists; on "The influence of particle size in the paint and rubber industries," with Sir William Bragg in the chair; on "Fat extraction by solvents," by chemical engineers and oil and colour chemists; and on "Solid Smokeless Fuel," by the new Fuel Section of the Society.

This year Mr. W. J. U. Woolcock, the president, completes two years' service, during which the membership has been increased and British chemical interests have been brought into a closer co-operative relation. His successor will be Mr. Francis H. Carr, who has played a distinguished part in the development of the British fine chemical industry, and was closely associated with the early commercial production of insulin in this country.

Gasworks and Sulphate Problems

THE annual meeting of the Institution of Gas Engineers, which was to have been held in London this month, has had, unhappily, to be postponed owing to the necessity that those responsible for the manufacture and supply of gas should be continually on the spot and ready to deal with the difficult situation in which a cessation of the usual coal supplies places them. The address of the president, Mr. Charles F. Botley, has been published, however, and amongst his thoughtful reflections on the many phases of the industry there are a number of points which are of direct interest to the chemist and chemical manufacturer. The gas engineer is, perhaps, one of the most representative of chemical engineers, and in the treatment of his by-products he necessarily becomes a heavy chemical manufacturer. For this reason it is highly interesting to have first-hand information on the present outlook for such staple products as tar, sulphate of ammonia and benzol.

In speaking of sulphate of ammonia, Mr. Botley leaves the impression that from the gasworks point of view the situation is not altogether satisfactory. In other words, the selling value of sulphate at the present time is less than it was in pre-war days, while the cost of manufacture is more than double. The point, however, which must always stand out above all others is that, in the process of carbonising coal for the production of gas, ammoniacal liquor is a necessary concurrent product. Its production cannot be avoided, and, therefore, in some manner or other it must be disposed of. There are those who argue that if the current value of sulphate of ammonia is insufficient to cover the cost of producing it from gas liquor, then, from an economical standpoint, the only alternative is to dispose of it as waste. Apart, however, from the fact that this is easier said than done, when consideration is given to official regulations in regard to chemical effluents, there is the much broader and national point of view to be taken into account, namely, that the ammoniacal liquor produced annually in this country constitutes as yet the greatest potential source of our most important fertiliser. Therefore, seeing that it can undoubtedly be turned to a highly useful purpose, it is clearly incumbent upon the gas undertakings to continue to work it up into sulphate of ammonia, though it may not contribute to the revenue and may even become a charge upon it. We have an analogy in the coal mining industry which, though coal be won at a direct loss, must obviously continue to be carried on.

There are, fortunately, encouraging signs of a greatly increasing use for artificial fertilisers, and the educational propaganda of the past few years is undoubtedly bearing fruit. It is, however, the limitless opportunities for extracting fixed nitrogen from the air that must continue to cloud the future of the natural product. Where the bedrock level of prices will lie, it is not yet possible to prophesy. With the gas undertakings' product the economic limit seems about to have been reached, but even though lower prices may prevail there need be little fear that these undertakings, or at least the larger of them, will discontinue manufacture. In brief, if sulphate becomes a charge on the revenue, then the debit balance must be recovered indirectly, which probably means that it must be made good by increasing the cost of gas, or be offset by higher values for other residual products.

Non-Toxic Tar

As a raw material of the chemical industry coal tar ranks second to none in importance, and it has been rightly said that the exceptional progress of the organic chemical industry during the last twenty or thirty years has in a great measure been due to the increasing utilisation of the innumerable coal tar constituents. From the industrial and commercial points of view, as distinct from those of the organic chemical industry itself, the various crude products derived from coal tar are of prime importance, so that, as representing the mouthpiece of one of the two great industries that are solely responsible for the output of tar in this country, it was to be expected that Mr. Botley would take the opportunity for expressing his opinion on the present state of this valuable residual. It is interesting to be told, for instance, that the high prices realised for tar some years ago were not altogether an advantage, because its use became restricted for certain purposes, and this provided an opportunity for the introduction of competitive substances. Accordingly, at the present time, prices cannot be said to be in excess of its intrinsic value. Quality, as with so many other staple materials nowadays as compared with the requirements of the past, is of first importance; and, following on the lines of other industries, much valuable research work is now being carried out. A good deal has lately been heard of the tar *versus* bitumen controversy, and, in view of some of the statements that have appeared, it is a matter of interest to hear from Mr. Botley that a non-toxic coal tar is now being produced, and that special varieties are also available which can be employed under almost all climatic conditions. These results at least illustrate what a valuable stimulant competition proves, and it merely remains for the numerous producers to ensure that the official specifications laid down (of which a new one is shortly expected to be published) are complied with to the letter.

This compliance with recognised specifications is, perhaps, one of the outstanding problems with which an industry such as that associated with tar production is faced. As is well known, producers of the auxiliary products derived from the carbonisation of coal are scattered in all parts of the country, the plant they employ in both primary and secondary operations is unusually varied, the influences to which the condensible vapours evolved from the coal are subjected are far from constant, so that the ultimate constitution of a product such as tar can scarcely be the same in any two instances. This undoubtedly places the producer at a considerable disadvantage when faced with the compliance with official specifications, but in the majority of cases such specifications provide sufficient latitude to enable him to meet his obligations.

Beryllium from Canada

CONSIDERABLE attention of late has been given by metallurgists to the new metal, beryllium, which promises to lead to the production of a lighter alloy than any yet in use, and research on the subject is proceeding in several quarters. From a statement prepared by Mr. V. L. Eardley-Wilmot, on behalf of the Mines Branch of the Canadian Department of Mines at Ottawa, we learn that Canadian occurrences of beryl, the aluminium silicate of beryllium, have hitherto been regarded as primarily of mineralogical interest or as possible sources of emerald, but the proposed new use for the metal beryllium (or glucinum) as a constituent of special light weight alloys has recently directed attention to the economic value of these occurrences. One of the richest deposits known in Canada is situated in Renfrew county, Ontario, about 150 miles north-east of Toronto, and near the village of Quadville. The beryl here occurs in a coarse pegmatite dike, in well-formed pea-green six-sided prisms, clustered closely together in places, and containing crystals some of which are 2 ft. or more in length and from 3 in. to 6 in. in diameter. The extent of the deposit has not yet been determined, but surface conditions indicate possibilities of a large tonnage of high grade beryl ore. The deposit also contains a number of the rarer minerals, notably the columbian minerals, and is thus of interest mineralogically. About a dozen other deposits of beryl are known in Canada, the most promising of which is found in the Abitibi region of the western part of the Province of Quebec, twenty miles south-west of Amos on the Canadian National Railway. The beryl was discovered here some fifteen years ago, when mining operations for molybdenite were being carried on. Hexagonal crystals measuring up to three or four inches in diameter are found in nests, tightly packed about by a mass of flaky muscovite mica containing a small amount of felspar. The pure deep green transparent forms of beryl are in great demand as gem stones.

Ordinary beryl is sometimes used to replace felspar in the manufacture of porcelain for use in the higher grades of spark plugs and insulators; a more universal recognition of this use alone would probably require a considerable quantity of the mineral. Its toughness and hardness also make it useful as an abrasive; for this purpose the electrically fused mineral is said to have met with success. The salts of beryllium are used for several purposes, and particularly in the nitrate form, to increase the strength of incandescent gas mantles. Because of certain physical characteristics it possesses, the metal beryllium is adaptable for special uses in electrical and physical apparatus. The metallurgical difficulties involved in the commercial extraction of the metal from its ores have prevented to a great extent a larger use of the metal. The remarkable properties of beryllium have in the last five years been more fully recognised, and increased attention has consequently been devoted to the metallurgical problem. More economical methods that will lower the cost of the metal and its salts are being discovered, and these may permit of their use in various ways that hitherto have been prohibitive on account of expense. This increased demand is stimulating prospecting for domestic deposits in Canada and may lead to important developments. United States quotations for beryl are nominal at $85 per ton of hand-sorted crystals f.o.b. New York. The metallic oxide (BeO) content should be over 10 per cent. (when pure it contains 14 per cent.) and the mineral should be as free from felspar as possible.

America's Chemical Jubilee

THE American Chemical Society, which was founded in 1876, celebrates its fiftieth anniversay in Philadelphia, U.S.A., on September 6 to 11 next. It is anticipated that some 3,500 chemists from all parts of the world will be present. The Society will meet in eighteen divisional gatherings, namely:—Agricultural and food chemistry, biological chemistry, cellulose chemistry, chemical education, dye chemistry, fertiliser chemistry, gas and fuel chemistry, industrial and engineering chemistry, leather and gelatin chemistry, medicinal products chemistry, organic chemistry, petroleum chemistry, physical and inorganic chemistry, rubber chemistry, sugar chemistry, water, sewage and sanitation chemistry, history of chemistry, and paint and varnish chemistry.

Many of the Divisions will hold special sessions at which papers and addresses of importance will be presented by authorities in their respective fields. In addition, there will be two general meetings of the whole Society with evening entertainments and gatherings open to all members and visitors. The American Chemical Society will send no direct invitations or requests for the appointment of special delegates from other organisations. Instead, it publicly invites all non-American chemists to attend and take part in the meeting on the same basis and under the same conditions as members of the Society. The Society is expecting many visiting chemists from other countries and will endeavour to see that they are given a warm welcome in full fellowship at this gathering. Foreign chemists expecting to attend the meeting should, if possible, send advance information to Dr. Charles L. Parsons, Secretary, Mills Building, Washington, D.C., U.S.A.

Books Received

PRACTICAL ULTRA-VIOLET LIGHT THERAPY. By T. Clyde McKenzie and A. A. King. London: Ernest Benn, Ltd. Pp. 106. 6s.

IF I WERE A LABOUR LEADER. By Ernest J. P. Benn. London: Ernest Benn, Ltd. Pp. 154. 3s. 6d.

PHOTOCHEMICAL REACTIONS IN LIQUIDS AND GASES. A general discussion held by the Faraday Society. October, 1925. Pp. 658. 15s. 6d.

REPORTS OF THE PROGRESS OF APPLIED CHEMISTRY. Issued by the Society of Chemical Industry. Vol. X.—1925. Pp. 700.

The Calendar

June 22	National Physical Laboratory: Annual Visit of Inspection. 3 to 6 p.m.	Teddington.
24	Royal Society: Meeting. 4.30 p.m.	Burlington House, Piccadilly, London.
July 19	Institution of Chemical Engineers: Fourth Annual Corporate Meeting.	Committee Room D, Central Hall, Westminster, London.
19	Institution of Chemical Engineers: Annual Dinner. 6.30 for 7 p.m.	Great Central Hotel, London.
19–23	Society of Chemical Industry. Annual meeting.	London.

The Growth of the I.G. Farbenindustrie

Some Remarkable New Facts

From reports which have recently appeared in the German press, it is clear that the activities of the I.G. Farbenindustrie Aktiengesellschaft are being extended on a remarkable scale. Prior to the general meeting of the I.G., which took place on June 10, the Berlin banking house of Schwarz, Goldschmidt and Co. published a review of the development of the trust, as regarded from the economic and financial point of view. We publish below an abstract of some of the more important points of the review, together with certain further information which has appeared elsewhere in the German press.

In regard to agricultural products, the I.G. has, of course, gained its reputation on the score of its fertilisers. But it also deals with other aspects of agriculture. In particular, attention may be drawn to the interest which is being taken throughout the world in the production of insecticides. The German bankers' report points out that the activities of the boll-weevil in the American cotton-growing areas directly affect the cotton industry in Germany, and state that important results may therefore accrue if research is directed to the extermination of such pests. The I.G. manufactures products known as Upsulum, Solbar and Certan at Leverkusen and elsewhere, and works in an " amicable " manner with the Deutsche Gesellschaft für Schädlings-Bekämpfung (company for combating pests).

In addition to nitrogen and potassium, phosphate fertilisers are required. France can, from Tunis, Algeria, and Morocco, supply all Europe. Reference is made to the production of phosphoric acid from crude phosphate in the electric furnace, details of which appear elsewhere in this issue. Up to now, crude phosphate has been converted to superphosphates by means of sulphuric acid, the latter being " ballast." The production of a phosphate fertiliser without the use of sulphuric acid is of great importance, and the problem seems to have been solved by the new method. Great hopes are centred on the fertiliser Leunaphoska (to which reference has been made in THE CHEMICAL AGE in the account of the Biarritz conference). This fertiliser contains 13 per cent. of nitrogen, 10 per cent. of P_2O_5, and 13 per cent. of K_2O. It is stated in the annual report for 1925 of the Bavarian Stickstoffwerke that the application of 335,000 tons of pure nitrogen (in the form of fertilisers) resulted in the fertiliser year 1924-25 in Germany in a harvest which has brought the country appreciably nearer to independence of imported cereals. The president of the State bank has indicated to German agriculturists that credits are given primarily for the purpose of increasing production, and not for the maintenance of property which its occupiers do not utilise productively enough. Hence the State has provided credits for nitrogen and potassium.

Hydrocarbons and their Derivatives

The German review points out that next to the increase of agricultural production comes the necessity of better utilisation of coal and lignite. In this direction the activities of the I.G. are well known. The electro-chemical utilisation of coal leads, *via* the production of calcium carbide, to the production of cyanamide (of which little is made), acetic acid (4 I.G. plants working), and ethyl alcohol (I.G. plant at Ludwigshafen). The production of acetic acid is already such as seriously to threaten the method of production from wood. In regard to the production of synthetic methanol it is difficult to ascertain the real facts. On the one hand, the directors of the Badische Anilin und Soda Fabrik made a statement some little time ago which was calculated to prevent the growth of undue optimism. On the other, it seems that a large new works is being erected, with a capacity up to 1,000 tons of methanol per day. (Further information on this point may be found in the account of the statements made at the general meeting of the I.G., published in this issue.)

It should be observed that the I.G. has connections with companies operating the " Berginisation" of coal, *e.g.*, the Bergius Evag Co., and the Steinkohlen-Bergen A.-G. In the main, the I.G. production of oil fuels is concentrated in two directions; that is, the reduction of carbon monoxide, with hydrogen, to methane, and methanol and other alcohols, and the liquefaction and hydrogenation of coal. By the first method butyl alcohol may be obtained. This finds growing application as a solvent. In the United States two plants manufacture butyl alcohol, to the total quantity of 25,000 to 30,000 tons per annum, by an older method. In 1924, United States imports of the alcohol from Germany amounted to 400,000 marks and in 1925 to 1,750,000 marks. Incidentally the production of this and other solvents give the I.G. an opportunity of controlling the lacquer industry in Germany, owing to the growing use of nitrocellulose lacquers. In Höchst large new plants are being erected, in which will be prepared the finest lacquers, using I.G. butyl alcohol and other solvents, I.G. cellulose acetate and nitrocellulose, and I.G. dyestuffs.

Dyestuffs

The full name of the I.G. is derived from the dyestuff interests of the companies who were first concerned in its formation. The activities of the trust in this branch of the chemical industry have been fully and frequently noted in these columns, and it is therefore unnecessary to enter into them at great length. A very important statement in regard to the matter is made in the *Chemiker-Zeitung* for June 9: " It may be assumed that the co-operation of the I.G. with the British dyestuff industry, planned for years, will soon come into being." As regards aniline dyes, British Indian imports from Germany amounted in 1921–2 to three million pounds weight, in 1923–24 to 8¼ million pounds; " Germany has already reconquered this market." As regards alizarine colours imported into British India, Germany's share was 3 million pounds weight, Britain's only 2·4 million.

The bankers' report is of opinion that American competition in dyestuff exports is not dangerous, as the prices obtained are not sufficiently remunerative to American firms. The new German-American company should, it is thought, be in a very advantageous position, enjoying as it will the 50 years of experience of the five great German companies whose fusion initiated the I.G. As regards exports to India, China and Japan, in competition with America, it is believed that what the I.G. loses on the swings it will gain on the roundabouts: either its exports will increase, or low exports will be compensated by increased prices. As regards exports to America, the I.G. hopes to overcome the tariff barrier by the establishment of " filial " companies in America. Even now, decreased German exports of dyestuffs to America are in some degree compensated by much increased prices.

Artificial Silk

It is in regard to the production of artificial silk that the bankers' review is most informative. " By means of negotiations carried on with great diplomatic skill the I.G. has succeeded in coming to a working arrangement with the principal artificial silk manufacturers of the world." The greatest stress is laid on cuprammonium and cellulose acetate silk, the former being regarded as the best form of all. As regards viscose silk, it is pointed out that Courtaulds of England, the Glanzstoff company of Germany, and the Enka company of Holland are already working together; and the now assured joint activity of the I.G. with these, and with the German Bemberg company (the latter manufacturing cuprammonium silk), will probably lead to very profitable results for the I.G. For a number of years, viscose silk has been produced in increasing quantities by the I.G. at Wolfen (presumably this statement, made in the bankers' report, refers to one of the associated companies).

Dr. P. Bronnert, the former director of the Glanzstoff company, has developed an improved viscose process, which is being operated at his works in Strasburg (as already reported in THE CHEMICAL AGE). Courtaulds have reached an understanding with the latter. As the Glanzstoff company and Courtaulds are erecting a joint factory near Cologne, it is probable that the improved viscose process will be accessible to the I.G. The latter is erecting a large new factory for the production of cuprammonium silk. It will cost about 16 million marks, and will have a daily output of 10,000 kilograms. Up to now, cellulose acetate silk has not been manufactured in Germany, but the Glanzstoff and Agfa

companies, as representatives of the I.G., have now founded, for this purpose, the Acetat-Gesellschaft. This silk is especially useful, as in combination with cellulose silks and other fibres it gives remarkable cross-dying effects. It may be noted that the I.G. will be in a position to supply the necessary chemicals (acetic acid, caustic soda, cellulose, carbon disulphide, dyestuffs, etc.) not only to its own artificial silk factories, but also to those having working arrangements with it, such as the Glanzstoff company and the new Glanzstoff-Courtaulds company. It may be assumed that the I.G. will produce 12–15,000 kilograms of the three different kinds of silk daily, which indicates an annual production of 3–4,000 tons.

The Interested Companies

The bankers' report gives an enumeration of the companies participating in the I.G. Farbenindustrie A.-G. The leading companies are: the Badische Co., Ammoniakwerk Merseburg, Farbenfabriken vorm. F. Bayer and Co., Farbwerke vorm. Meister Lucius u. Brüning, Casella and Co., Griesheim-Elektron, Agfa, Chem. Fabriken vorm. Werler-ter-Meer, Dahl and Co. A.-G., Karl Jäger G.m.b.H., Kalle and Co., Oehler, and Chem.-Werke Griesheim G.m.b.H. In addition there is a large number of companies dealing with special industries. Under the heading of fertilisers and agriculture are enumerated 5 (including a sugar factory); under chemicals, 5; under electrochemical and metallurgical, 10 (one in Barcelona); under coal, lignite and oil; 9 (including Montanwerke, Bergin Kohle A.-G., Evag, and Deutsche Gasolin A.-G.); under compressed gases, 3; under textiles, 5. Under foreign sales companies are mentioned a number of organisations, including Bayer Products, Ltd., in London, while the General Dyestuff Corporation is stated, though under this heading, to have factories in Albany and Paterson. In addition a number of companies come under a general heading (one manufacturing photographic apparatus). The list ends with the significant statement that it is not known, outside the I.G., if the above enumeration of members is complete.

The I.G. General Meeting

Synthetic Motor Fuel

In a statement to the shareholders read at the general meeting on Thursday, June 10, of the I.G. (says *The Times* Berlin correspondent), a cautious reference was made to the new synthetic motor fuel which is being put on the market. News of the plans of the trust to erect a large plant for coal distillation in the centre of the German coal and lignite district has been accompanied by speculative reports of the coming production of synthetic motor fuel on such a large scale as to make it possible to talk of Germany's supplying her own motor fuel needs and even exporting, in the not very distant future.

The board's statement, referring to Press reports that the Trust has been occupied for some time with "anti-knocking" agencies, and the production of fuels through coal distillation, says that these activities have now reached a promising stage. The management is now obliged to take all suitable steps to retain the fruits of these experiments mainly for the trust and for German industry, as in the case of synthetic nitrogenous products. In connection with its new interests in the sphere of oil, the trust has joined with certain foreign undertakings in the Deutsche Gasolin A.G. in order to be in relation with oil-selling organisations. The shareholders are asked to be content with this announcement as further details cannot for obvious reasons be made public. Cautious as it is, this statement is a considerable advance on that issued less than a year ago by one of the chief component companies of the trust, the Badische Anilin und Soda Fabrik, which, in discussing the prospects of the commercial use of methyl-alcohol —or "Methanol" as the synthetic product is called—contained a warning against premature hopes of Germany's being able to supply her own motor fuel needs. "Methanol" had proved effective as a motor fuel, but there was no prospect then of its being produced cheaply enough.

Centralisation and Combination

The formation of the trust, combined with some shrewd additional acquisitions of control over processes, has concentrated practically all the inventions and processes dealing with the distillation of coal and the production of motor fuels in the hands of a staff of chemists and engineers such as, it is claimed, no other chemical undertaking in the world has at its disposal. It is, therefore, not surprising that experiments in the cheaper production of "Methanol" and in correcting the "knocking" tendencies of benzine distilled through coal and of benzol mixtures have made big strides in recent months, justifying precautionary marketing arrangements. In the Deutsche Gasolin A.G. the German Dye Trust is stated to have a 50 per cent. interest, the Standard Oil Company 25 per cent., and the Shell interests 25 per cent. There is talk of a neutral foreign holding company being formed; so far this report has been neither denied nor confirmed. In view of the naturally cautious attitude of those immediately concerned there is a good deal of speculation as to the motives behind this partnership on both sides. With the new plant, it is estimated that within two years an annual output of 250,000 to 300,000 tons of synthetic motor fuel will be possible. It is not clear whether this estimate refers only to "Motalin" (motor fuel treated with iron carbonyl, as described some time ago in The Chemical Age), whether it covers improvements understood to have been achieved in the production of "Methanol," or whether a cheaper "Methanol" might play a part in a mixture treated with the "anti-knocking" preparation.

As the German consumption of motor fuel in 1925 was some 600,000 tons, and as, at the rapid rate of increase in mechanical transport, it is estimated that it will be something like 1,000,000 tons in two years, the time when Germany could supply her own needs with synthetic fuel and think of exporting would still seem to be a little distant. Nevertheless, it is estimated that the prospects of eventual competition opened up by the appearance of "Motalin" in the market have played some part in bringing the big rival oil concerns together into partnership with the German Dye Trust in the supplying of the German motor fuel market. Another consideration is the interest that the United States and other foreign users may be expected to evince for a new "anti-knocking" agency and indeed for all synthetic processes, as the necessity of eventual reliance of coal distillation is recognised. The German Dye Trust's interest in such a partnership at such an early stage is considered to be less evident, but it is assumed to rest, apart from the Gasolin Company's requirements of imported benzine for some time to come, upon similar considerations of precaution.

Synthetic Indigo Prices

Mr. F. T. T. Reynolds, of Manchester, writes to the *Manchester Guardian*:—Sir Philip Cunliffe-Lister gave a typically Board of Trade reply to the question asked in the House of Commons on Tuesday evening by Mr. Duckworth, one of the members for Blackburn, concerning the price of synthetic indigo being so much higher here than in any other important consuming country. The President gave the figures quite correctly of the prices that are current and that have prevailed for some time past in the U.S.A. for 20 per cent. synthetic indigo—viz., 13 to 14½ cents per pound, according to quantity. These figures compare with 10d. per pound in the United Kingdom, less a discount varying according to a quantity scale. It may be taken that the difference is approximately 3d. per pound higher in the United Kingdom than in the U.S.A. This severe handicap is really rather less now than the average since the Dyestuffs Act so gravely prejudiced British trade in finished textile fabrics. But, as usually happens when questions are asked in the House about the hurtful effects of the Dyestuffs Act and the Safeguarding of Industries Act, the issue was beclouded and the non-technical members of the House confused by the reply, which in this case was that, "in view of the comparatively small margin at present between German and British prices," no useful purpose would be served by an inquiry. The real point surely is, why can the makers in the U.S.A. sell synthetic indigo 20 per cent. paste at prices both for internal consumption and for export that are approximately £30 per ton less than the current prices in the United Kingdom? Until the later part of the Great War synthetic indigo was not produced on a commercial scale in the U.S.A., whereas the United Kingdom were able to utilise the German built and equipped works at Ellesmere Port on a basis that gave us a good start and a marked advantage.

Explosive Reactions in Gaseous Media

A Discussion at the Faraday Society

On Monday a general discussion on the above subject was held, under the auspices of the Faraday Society, at the Institution of Mechanical Engineers. The programme was divided into two parts, in the first of which explosive reactions were considered generally, while in the second they were considered in reference to internal combustion engines. The Chairmen for Part I and Part II of the discussion respectively were Prof. H. B. Dixon, F.R.S., and Sir Dugald Clerk, F.R.S.

Before the discussion commenced, reference was made by the President (Prof. F. G. Donnan) to the loss sustained by the society by the recent death of Mr. F. S. Spiers, O.B.E., B.Sc., F.Inst.P., A.M.I.E.E., its secretary and editor, and a resolution of deep sympathy with his relatives was passed.

The subject of the first part of the programme was introduced by Dr. W. E. Garner, who gave a brief general survey of "Explosive Reactions Considered Generally," which was to a large extent historical, but served also to illustrate the complexity of the subject.

A paper on "The Ignition Point of Gases" was read by Professor H. B. Dixon, J. Harwood and W. F. Higgins. Experiments were described which were carried out on behalf of the Safety in Mines Research Board. The experiments were concerned with the determination of ignition points of gases by the adiabatic compression and concentric tube methods. Tables were given showing the average ignition points from a number of tests made with hydrogen in oxygen and in air at different pressures with lags varying from 0·5 to 15 seconds, from which it was seen that the concentric tube experiments were in good agreement with and might be linked up to the results found by compression.

Radiation in Gaseous Explosions

A paper on "Radiation in Gaseous Explosions," by Professor W. W. T. David, gave a short account of experiments upon the emission of radiation from exploded gaseous mixtures contained in a closed vessel, which threw light upon the nature and origin of the emitted radiation. An account was also given of some recent experiments showing the effect of infra-red radiation on the rate of combustion of inflammable gaseous mixtures containing nitrogen.

W. E. Garner and S. W. Saunders read a paper, "Ionisation in Gas Explosions." From the scanty data on ionisation the following conclusions, among others, were drawn: Firstly, that ionisation plays no part in the ignition of gases; and, secondly, that the action of anti-knocks and knock-inducers in the petrol engine cannot be satisfactorily explained by the theory of Wendt and Grimm.

Other papers read included: "Ionisation and Gaseous Explosions," by S. C. Lind (of the U.S. Fixed Nitrogen Laboratory); "The Uniform Movement of Flame," by Professor R. V. Wheeler and Dr. W. Payman; "Explosion Wave in Cyanogen Mixtures," by Dr. C. Campbell and Professor H. B. Dixon. In the absence of Professor W. A. Bone, who was to have read a paper on "Gaseous Explosions at High Initial Pressures," Dr. Fraser described briefly researches on this subject which had been carried out during recent years at the Imperial College of Science and Technology. It was indicated that new experimental evidence had been obtained that the presence of moisture is not essential to the combustion of CO.

In the discussion Mr. T. C. Sutton referred to work which he and Mr. H. R. Ambler had been doing at the Research Department, Woolwich Arsenal, and deduced from the results the following conditions essential for an anti-knock substance: (1) The substance must be readily decomposed; (2) it must form a finely divided cloud in the front of any advancing detonation wave, of either metal, oxide, soot, or some such body which was capable of absorbing large volumes of gas as the wave passed; (3) it was advantageous that the body should give out appreciable heat on decomposition, so that the particles formed were at a high temperature as the wave passed. When the absorptivity was as great as indicated in these novel experiments, each small particle would absorb the gas from a relatively large region around it and would reduce the energy in any advancing wave in much the same way as bubbles of air damped out a wave advancing under water.

Explosions in Internal Combustion Engines

In the second part of the programme an introductory survey of "Explosive Reactions Considered in Reference to Internal Combustion Engines" was made by Sir Dugald Clerk, F.R.S.

He stated that the working fluid of all internal combustion engines near the end of the stroke consisted of steam, carbon dioxide, nitrogen and oxygen. At that point the combustion of the gaseous mixture was practically complete, but the reactions proceeding during the initial spread of flame in gas engines and injection of burning oil spray in most oil engines were very complex and were not yet thoroughly investigated. To develop the theory of those motors it was necessary to obtain more accurate values as to dissociation, continued combustion and heat loss during initial combustion and expansion by convection and radiation.

"The Effect of Metallic Sols in Delaying Detonation in Internal Combustion Engines" was discussed by Flight-Lieutenant C. J. Sims, D.F.C., assisted by Dr. E. W. J. Mardles. This paper described experiments dealing with the effect on detonation of small additions to the liquid fuel of certain metals in colloidal form, with a view to elucidating the physical and chemical actions that must occur in order that detonation might be prevented or controlled. Colloidal solutions of lead, iron, gold, carbon and nickel were used. The results showed that the colloidal sols of iron, lead and nickel were just as effective as the organometallic compounds, such as lead tetra-ethyl, and in some cases slightly more so. In the case of gold a negative result was obtained. The effectiveness of the colloidal metal sols, freshly prepared in an inert atmosphere, supported in a striking manner the view that it was the metal alone which was the active agent. Although it was improbable that active colloidal sols could be used commercially on account of the difficulty of keeping them for any length of time in a state of stability and activity, their efficacy suggested likely substances which would be practicable—viz., those organometallic compounds which readily broke up thermally into active or pyrophoric metal particles; for example, the alkyl and aryl derivatives of metals which could exist in the pyrophoric state, also the nitrosyls, carbonyls, oleates, ethylenes, etc., of these metals.

In a discussion of "Explosions in Petrol Engines," by H. T. Tizard, the author said that the study of the nature of explosions in internal combustion engines had a direct practical aim of great importance—namely, that of increasing the thermal efficiency of the engine. The petrol engine, judged by other present-day standards, was already an extremely efficient machine; yet anyone discovering a practical method of so controlling the rate of combustion of fuels as to enable the average expansion ratio of petrol engines to be raised from, say, 5 : 1 to 7 : 1—an alteration which involved little or no engineering difficulties—would save the country in time several million pounds a year.

Dr. W. T. David read a paper on "Combustion in Gas Engines."

Mercurial Poisoning Death

At the Birmingham County Court, on Thursday, June 10, judgment was delivered in a case under the Workmen's Compensation Act, in which the point at issue was whether a workman died from poisoning or natural causes. The workman, named Richard Joffe, was an electric meter inspector, and the plaintiff in the action was his widow. The amount of the claim was £520. The defendants, the Corporation, held that death was due, not to mercurial poisoning, but to an obscure germ. The duties of Joffe were to examine electric meters, which contained a small vessel of mercury. He had to clean these vessels. Towards the end of 1924 he showed symptoms consistent with mercurial poisoning, from which he appeared to recover. The evidence of the widow showed that he had never recovered, though he tried to hide his symptoms. He died in February, 1925. There was a conflict of medical evidence, that on the one side attributing death to mercurial poisoning, while Professor Morrison, for the respondents, held that death was due to myelitis. His Honour Judge Ruegg gave judgment for the plaintiff.

Superphosphate Industry

International Co-operation

THE April conferences of representative of European nitrogen works at Biarritz is stated to have since been followed by a meeting in Paris of representatives of the works interested in the superphosphate industry, and this is to be succeeded by a further conference to be held shortly in London. One of the principal German parties concerned with the discussions in Paris has made the following statement on the matter :—

"At the instance of Mr. Mathiassohn, director of the Swedish Reyersholms Gamla Industri Aktiebolag of Helsingborg, an international discussion took place in Paris on June 1 and 2, representatives of the industries concerned from Germany, France, Belgium, Great Britain, Holland, Sweden, Norway and Denmark being present. The discussions concerned the question as to the possibility of bringing about international co-operation in the matter of scientific investigation as to the importance of phosphoric acid in general and of superphosphate in particular, and the joint use of the results of the research work for purposes of propaganda for superphosphate and its mixtures. A way was found for constant interchange of all research work and publications respecting superphosphate. In this connection it is stated that the conference expressed its thanks to the German investigators—Prof. Lemmermann and Herr Gerlach—for their work directed against the neglect of phosphoric acid in artificial fertilising. It is proposed periodically to continue these discussions."

Commenting on the above statement the *Frankfurter Zeitung* of June 6 states that the communication places the greatest weight on research. On its part the newspaper says that it would like to believe that the question of practical economic co-operation will not be ignored. In this direction is mentioned the new production of nitrogenous phosphate which has just been embarked upon by the I.G. Farbenindustrie, by the partial utilisation of the State Piesteritz works and of the surplus energy there available.

At present Germany possesses about 60 superphosphate works, almost all of which are connected with the German Superphosphate Industry Company, which already regulates the inland sales of this material. France is also a large producer. The newspaper says that the above communication gains special importance from the fact that it indicates a new industrial branch in which all nations participate and in which important developments of organisation will be possible. In the first place this will be for the purpose of strengthening propaganda simultaneously with a sharing of the expenses, and perhaps later on with the object of obtaining industrial and political economic aims. If it should be confirmed that the I.G. Farbenindustrie and other producers of fertilisers permanently seek a solution by bringing about still lower prices, and not by the old method of forming a syndicate with monopolistic forcing up of prices, it will then not be difficult to educate consumers up to the largely increased production, that is to say, to find profits not in prices but in turnover.

Production of Phosphoric Acid

The above reference to the Piesteritz works may be amplified by an extract from the same newspaper of date June 1. At this works, says the newspaper, the I.G. Farbenindustrie and the Bavarian Stickstoff Werke propose to produce phosphorus by electrical means. The works, which is situated on the Elbe, near Wittenberg, and belongs to a State (Reich) company—the A.G. Mitteldeutsche Stickstoff Werke—has recently been leased for a long term as from January 1, 1926, to the Bavarian Stickstoff Werke on payment of a rental, so that the Reich company, which has hitherto been unremunerative, will now be able to pay a dividend.

The Frankfort newspaper proceeds to state that it has been found possible so to improve the method of producing cyanamide at the Piesteritz works that a much smaller number of kilowatt-hours is now necessary than formerly for turning out the same quantity of cyanamide. This has permitted of a reduction in the main working ; it is said, for instance, that one half of the plant can now produce as much cyanamide as was previously made in the whole of the works, that is 30,000 tons of nitrogen, or about 145,000 tons of cyanamide. In the meantime at the works of the Bavarian Stickstoff Werke small experimental furnaces have been erected for working up foreign phosphate into phosphorus or phosphoric acid. The results of these experiments, in connection with the economy realised in electrical energy consumed in the production of cyanamide at the Piesteritz works, have advanced the scheme for a decisive reconstruction of a part of the carbide furnaces and other equipment at the Piesteritz works. For the present one half of the plant is being transformed for the production of phosphorus by the use of the energy obtained from the Golpa-Zschornewitz peat fuel electric generating station.

An agreement is reported by the newspaper to have been made under which the Bavarian Stickstoff Werke and the Leuna dyestuffs group will jointly undertake the technical execution and financing of the new manufacture of phosphoric acid, there being an annual availability of 250,000,000 kilowatt-hours for the purpose. The result of the reconstruction already in hand will be a not inconsiderable increase of the production of phosphorus in Germany, foreign phosphate naturally forming the raw material. Arrangements are already foreseen for the full utilisation of the phosphorus at the Leuna works by the conversion of the phosphoric acid in connection with various ammonia and sulphate compounds into an ammonia-phosphate fertiliser, the composition of which is expected greatly to facilitate fertilisation and to encourage small farmers. The product in question is already being made in moderate quantities at the existing works of the I.G. Farbenindustrie, and it has been on the market for a short time past. The production of such a phosphate fertiliser will now be considerably increased by reason of the I.G. Farbenindustrie and its associated concerns having taken over a large part of the Piesteritz works and its surplus energy, the increase being estimated at 150,000 tons.

Synthetic Products, Ltd.

Voluntary Winding-up Resolution

THE shareholders of Synthetic Products, Ltd., have passed a resolution to wind up the company voluntarily, as " by reason of its liabilities " it cannot continue its business. Thus (the *Financial Times* states) ends the interesting, if uneventful, career of an enterprise formed for the purpose of supplying the world with synthetic rubber at a cost not to exceed 1s. per pound, and which, according to the prospectus, " may ultimately be reduced to about 6d. per pound." It was early in 1912 when the announcement, which naturally caused a scare among holders of plantation rubber shares, was made of the discovery of new economical processes for the manufacture of synthetic rubber. The possibility of making artificial rubber attracted many people, and even prominent scientists became involved in the controversy which raged at the time as to whether the manufacture could be accomplished on a commercial scale. Dr. Schidrowitz, the rubber expert, declared it to be impossible to make synthetic rubber in any quantity at a reasonable price to compare with plantation rubber. He backed his opinion by offering to pay a sum to charity if a single ton of synthetic rubber was produced within five years, and a further sum if the cost of production was less than 2s. 6d. per pound.

About the middle of 1912, however, the Synthetic Products Co. made its appearance. Men of reputation, such as Sir William Ramsay, were on the directorate, while Sir William Tilden was consulting chemist. The company was to exploit certain acetone and fusel oil processes, in the course of which artificial rubber was to be produced. The sponsors of the enterprise held out hopes of being able to displace by synthetic rubber the lowest grades of rubber. In fact, synthetic rubber was described as " a dream of the future." The works at Rainham were taken over by the Government when war broke out and experimental operations had consequently to be stopped. In April last the Court appointed a receiver on behalf of the debenture holders, there being over £8,000 due on the debentures.

It may be recalled that recently, in the Chancery Division, an action which occupied several sittings was brought by the Commercial Solvents Corporation, Ltd., against the Synthetic Products Co., Ltd., to obtain an injunction restraining the defendants from infringing their Patent No. 4845 of 1915, relating to the fermentation of maize starch by means of a bacillus isolated by Dr. Charles Weizmann so as to produce on a commercial scale acetone and butyl alcohol. Mr. Justice Romer granted the injunction, with costs on claim and counter-claim on the higher scale.

Chemical Trade Returns for May

All-round Decrease Produced by Strike

THE Board of Trade returns for May exhibit, as they were naturally expected to do, a serious shrinkage in overseas trade, on account of the general strike which took effect on May 4. Chemical trade, however, though it has suffered heavily, has not been affected so disastrously as several others. Chemical imports declined from £1,061,459 in May of 1925 to £1,039,421 last month, a loss of £22,038; chemical exports of United Kingdom manufactures and products show a decline of £331,341 from £2,058,799 to £1,727,458; chemical re-exports of imported merchandise declined by £63,332, more than half, from £112,443 to £49,111. The following tables give the detailed figures for the principal items included in chemicals, drugs, dyes, and colours for May of 1925 and 1926:—

Imports

	Quantities. Month ending May 31.		Value. Month ending May 31.	
	1925.	1926.	1925.	1926.
			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic tons	621	835	27,641	34,818
Acid Tartaric ..... cwt.	4,176	2,732	20,495	12,412
Bleaching Materials ,,	5,535	8,206	7,107	7,186
Borax..... ,,	7,043	6,408	8,283	7,139
Calcium Carbide... ,,	40,739	36,184	27,753	23,569
Coal Tar Products, not elsewhere specified value	—	—	59,233	122,121
Glycerine, Crude ..cwt.	101	—	300	—
Glycerine, Distilled ,,	322	42	1,324	176
Red Lead and Orange Lead..... cwt.	2,847	4,089	6,038	7,377
Nickel Oxide..... ,,	2,225	2,021	11,502	11,465
Potassium Nitrate ,,	1,392	6,527	1,866	7,160
Other Potassium Compounds ..... cwt.	221,588	108,462	52,471	35,726
Sodium Nitrate ... ,,	73,018	123,116	46,652	78,061
Other Sodium Compounds ..... cwt.	22,928	37,280	18,492	26,069
Tartar, Cream of .. ,,	3,819	2,481	14,298	8,808
Zinc Oxide ..... tons	800	696	27,477	26,320
All other sorts ... value	—	—	258,109	222,067
DRUGS, ETC.				
Quinine and Quinine Salts ..... oz.	211,653	81,840	21,716	6,934
Bark Cinchona ....cwt.	2,140	1,389	10,109	6,519
Other sorts ..... value	—	—	116,982	79,148
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products .....cwt.	101	—	1,313	—
Alizarine ..... ,,	29	150	1,008	7,108
Indigo, Synthetic.. ,,	—	—	—	—
Other sorts ..... ,,	1,568	2,865	38,909	70,430
Cutch ..... ,,	5,584	7,167	11,167	12,730
Other dyeing extracts cwt.	5,060	1,312	15,926	4,737
Indigo, Natural ... ,,	—	57	—	1,290
Extracts for Tanning ,,	105,959	65,893	102,651	60,604
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground ..cwt.	69,196	58,663	15,993	13,495
White Lead (dry).. ,,	8,254	12,514	16,679	23,576
All other sorts .... ,,	115,692	136,749	119,965	122,376
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	1,061,459	1,039,421

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ..... cwt.	2,491	5,162	3,108	4,327
Acid Tartaric..... ,,	637	783	3,623	4,295
Ammonium Chloride..tons	243	316	7,764	8,915
Ammonium Sulphate—				
To France ..... tons	526	—	6,996	—
Spain and Canaries tons	10,111	1,968	130,982	24,148
Italy..... ,,	464	350	6,094	4,455
Dutch E.Indies, tons	167	623	2,232	7,837
Japan..... ,,	500	1,797	6,250	23,020
British West India Islands and British Guiana .... tons	2,076	177	27,644	2,166
Other Countries ,,	1,568	3,698	21,030	46,557
Total .... ,,	15,412	8,613	201,228	108,183

	Quantities. Month ending May 31.		Value. Month ending May 31.	
	1925.	1926.	1925.	1926.
			£	£
Bleaching Powder .. cwt.	31,828	11,578	16,644	7,083
COAL TAR PRODUCTS—				
Anthracene ..... cwt.	2,869	1,000	1,344	437
Benzol and Toluol galls.	1,859	535	227	73
Carbolic Acid ..... cwt.	8,368	10,859	13,750	17,511
Naphtha ..... galls.	6,588	784	635	64
Naphthalene ..... cwt.	1,147	275	750	215
Tar, Oil, Creosote Oil, etc. .....galls.	4,217,855	4,175,437	134,719	126,740
Other sorts ..... cwt.	26,195	23,141	18,084	15,903
Total.....value	—	—	169,509	160,943
Copper, Sulphate of ..tons	7,097	4,026	163,071	84,847
Disinfectants, etc.....cwt.	39,728	28,551	94,716	67,099
Glycerine, Crude .... ,,	3,664	5,714	10,451	15,257
Glycerine, Distilled .. ,,	4,126	13,883	16,171	58,817
Total ..... ,,	7,790	19,597	26,622	74,074
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	2,000	702	4,062	1,323
Nitrate (Saltpetre) ,,	1,051	439	2,242	923
All other sorts .... ,,	2,478	3,177	12,727	9,942
Total ..... ,,	5,529	4,318	19,031	12,188
SODIUM COMPOUNDS—				
Carbonate ..... cwt.	440,165	444,364	118,345	141,927
Caustic..... ,,	128,439	172,568	105,110	124,354
Chromate and Bichromate ..... cwt.	3,242	1,654	5,580	2,329
Sulphate, including Salt Cake..... cwt.	128,669	73,359	19,169	12,937
All other sorts .... ,,	50,568	49,387	70,145	89,331
Total ..... ,,	751,083	741,332	318,349	370,878
Zinc Oxide ..... tons	116	57	4,991	2,446
Chemical Manufactures, etc., all other sorts.value	—	—	322,646	241,973
Total Chemical Manufactures (other than Drugs and Dyestuffs) value	—	—	1,351,302	1,147,251
DRUGS, etc.—				
Quinine and Quinine Salts ..... oz.	163,752	86,173	20,845	9,975
Opium ..... lb.	184	2	168	11
All other sorts ...value	—	—	251,931	211,859
Total ..... ,,	—	—	272,944	221,845
DYES AND DYESTUFFS—				
Coal Tar Products cwt.	9,289	6,266	70,665	47,049
Other sorts ..... ,,	3,521	4,383	6,626	6,242
Total ..... ,,	12,810	10,649	77,291	53,291
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground .. cwt.	9,195	460	3,875	216
White Lead (dry).. ,,	12,342	7,359	29,175	15,588
Paints and Colours ground in Oil or Water ..... cwt.	40,232	45,330	92,904	104,012
Paints and Enamels Prepared ..... cwt.	33,049	27,129	110,321	88,272
All other sorts .... ,,	61,861	50,103	120,987	96,983
Total ..... ,,	156,679	130,381	357,262	305,071
Total of Chemicals, Drugs, Dyes and Colours.....value	—	—	2,058,799	1,727,458

Re-Exports

	Quantities		Value	
CHEMICAL MANUFACTURES AND PRODUCTS—	1925	1926	1925 £	1926 £
Acids, Tartaric ... cwt.	425	83	2,337	495
Borax..... „	1,044	100	1,261	170
Coal Car Products value	—	—	10	678
Glycerine, Crude .. cwt.	—	—	—	—
Glycerine, Distilled „	120	—	540	—
Potassium Nitrate .cwt.	112	56	161	79
Sodium Nitrate ... „	2,550	1,281	1,726	847
Tartar, Cream of .. „	628	135	2,649	619
All other sorts....value	—	—	17,264	12,252
DRUGS, etc.—				
Quinine and Quinine Salts ..... oz.	14,137	12,137	1,696	1,578
Bark Cinchona .... cwt.	457	346	1,995	4,377
All other sorts....value	—	—	49,739	20,807
Cutch ..... cwt.	2,890	848	5,158	1,331
Other dyeing extracts „	214	89	1,952	435
Indigo, Natural ... „	10	—	336	—
Extracts for Tanning „	14,056	1,480	13,214	1,488
PAINTERS' COLOURS AND MATERIALS.....cwt.	3,067	898	10,819	2,909
Total of Chemicals, Drugs, Dyes and Colours ..... value	—	—	112,443	49,111

Dyestuffs for Cement Colouring

An Interesting Exhibit

AN exhibit that attracted considerable notice at the annual conversazione of the Institution of Civil Engineers on Wednesday evening was a collection of samples of concrete, aerocrete, and clinker concrete slabs illustrating the effects of Dr. G. N. White's new process of colouring such materials by the use of fast dyestuffs. The samples shown were remarkable for the purity of their tones and for the apparently complete penetration of the material. One section of the exhibit showed the difference in uniformity of colour between ordinary admixture of pigment and cement and the effects obtained by "processing." Side by side were shown sections of concrete to which various colours of the well-known Caledon series had been applied—in one case mixed, as received, with cement and sand in the proportion of 0·01 : 1·0 : 3·0, or ¼ per cent. of dye in the mass; and in the other as precipitated according to the process upon cement and sand in the same proportions. Fragments from early experiments indicated that the mass is coloured throughout, and other examples demonstrated that the depth of shade depends substantially upon the proportion of dyestuff to cement (*i.e.*, upon particle area) and not on the proportion of dyestuff in the complete mass. All the latter specimens contained four parts of dyestuff per 1,000 parts of cement. Other details shown included aerocrete blocks covered with a wash of aerocrete cement containing 3 per cent. of mica in addition to the dyestuff; aerocrete blocks covered with a wash of aerocrete cement coloured according to the process in full tones and half-tones; a section of concrete road surface dyed with a specially cheap colour; plaster, Keene's cement, ordinary Portland cement, and white cement covered according to the process; plaster specimens covered with a proprietary silicate water paint and using one part of colour per 3,000 of liquid; partial ranges of pure colours giving full tones and partial ranges using half the quantity of colour to give half tones. Side by side, again, were arranged samples of (1) Orange R Paste as received, (2) Orange R Paste as supplied for mixing with gauging water, showing a notable change in colour, and (3) Orange R Paste as supplied for mixing with gauging water after exposure to air for 24 hours, showing the reassumption of the original colour.

In addition to the aerocrete, concrete, and clinker concrete slabs, and hollow building blocks which had been "rendered" or coated with coloured cement to illustrate practical applications, there was also shown a concrete roofing tile which had been coloured a coppery green. For roofing tiles, the process may be regarded as a luxury because the ordinary red building tiles, with which ferric oxide is used as the colouring, only cost about 80s. per thousand. Nevertheless, the man who is willing to spend an extra £10 or so on his roof may give a much wider range to his fancy for colour and the possibilities in regard to garden flag stones, sundials, vases, ornaments, stone borders and, to take things to their ultimate conclusion, even tombstones and crosses, are fairly obvious. Aerocrete, a cellular though waterproof material, now approved for building purposes, requires a coating of cement outside for protection against the weather, and a coating or "rendering" of cement on the inside to give a smooth interior surface. If ordinary cement is used, the decoration is completed by applying one or more coats of distemper, and the economy resulting from using coloured cement for the final rendering is that the cost of labour and part of the cost of the material for distempering is saved. This may amount to £10 per house, and it would be chiefly applicable for small cottages and subsidy houses, where such a saving is obviously important. As regards Portland stone, the cost of this in public buildings is 20s. per square foot of outside surface and an imitation concrete composition using Portland stone aggregate (the colour of which is partly masked by the cement) only costs 10s. per square foot. The necessary colour to the cement for giving the exact imitation can, it is stated, be provided for an additional 2s. per square foot, and in this direction as well as in regard to roads, asbestos roofing, tiles and wall sheets, and in many other directions, there appears to be ample scope for future development and improvement. The exhibits created a very favourable impression, and as vat dyestuffs have to be employed, the commercialisation of the process would mean a considerable new market for the British dyestuff maker.

Vitaglass

ORDINARY glass permits the passage of some ultra-violet rays, but is quite opaque to rays of 310 or shorter wave-length. The limitations of such glass, whether from the medical or purely scientific aspect, are obvious. Now, as the result of scientific research by Mr. F. E. Lamplough, formerly Fellow of Trinity College, Cambridge, and for some years director of research with Chance Brothers, Lamplough Vitaglass is produced for him by Chance Brothers. The glass contains a high proportion of quartz and certain other ingredients not present in ordinary glass. It is harder than the normal product and transmits to the furthest limits of the sun's spectrum (290 to 295 wave-length) the beneficial ultra-violet rays to which ordinary glass is opaque. Vitaglass also transmits rather more of the visible rays.

Besides the very valuable medical properties of this glass, there would appear to be a useful field for Vitaglass in laboratory work and scientific fields generally.

British Acetylene and Welding Association

ON Tuesday, June 15, at the Hotel Victoria, London, Mr. Alexander Jackson was entertained to luncheon by the council and members of the British Acetylene and Welding Association, at which a presentation was made to him, as a mark of their personal esteem and their appreciation of his services to the Association and the industry for many years. Mr. Jackson has been president of the Association on two occasions, has been vice-president for half a dozen terms, has served on the council since 1916, has undertaken most of the secretarial work of the Association for long periods, and has done much on behalf of the Association in many directions. The presentation took the form of a book entitled "The Ruined Abbeys of Britain" (suitably inscribed) and six etchings. At the annual general meeting of the Association, held later, it was announced that Mr. Walter Yates had been elected president for 1926-27, and that Mr. Jackson had again been elected vice-president.

Mercury Poisoning from Stopped Teeth

MERCURY poisoning due to vapours arising from amalgam-filled teeth is apparently a very common complaint in Germany, according to Professor Stock, the famous chemist, of the Kaiser Wilhelm Institute. Hitherto it does not seem to have been recognised. Professor Stock described experiments on himself and his laboratory assistants, in which the vaporisation of mercury in the mouth led to symptoms of irritability and nervousness increasing in intensity over a period of years. Copper amalgam produced poisoning far more quickly than the others. The Imperial German Health Board has opened an official inquiry.

British Association of Chemists

Annual Meeting of London Section

THE annual meeting of this Section was held at the registered offices of this Association in London on Friday, June 11.

In declaring the meeting open Mr. S. R. Price, chairman of the council, said it was the duty of the section to make, at this meeting, plans for the coming year. One of the most important factors in preparing these plans was constructive criticism for which such a meeting gave an opportunity. He was glad to see many new faces at the meeting as indicating an increase of interest among the rank and file. The Association was in every way in a much better position than last year. The financial position showed a remarkable improvement, but every economy compatible with efficiency would continue to be exercised. The membership and prestige of the Association were increasing. Its function among chemical societies was unique, and with every addition to its membership its activities become increasingly valuable. The Chairman alluded to the valuable work of the legal aid department which had at least trebled its activities. He congratulated the committee upon their work during the past year.

Dr. W. R. Harris then presented his report which was unanimously adopted.

The Treasurer's report showed the Section's finances to be in a satisfactory condition. This was adopted without discussion.

Offices were then elected for the ensuing year as follows :—Chairman, Mr. S. R. Price; Treasurer, Mr. H. Dunford; Secretary, Dr. W. R. Harris. The six vacancies on the committee were filled as follows :—Mr. A. J. C. Cosbie, Mr. G. T. Gurr, Dr. Geoffrey Martin, Mr. J. C. Mellersh, Dr. Paul Haas and Mr. J. B. P. Harrison.

Congress of Chemists

Upon the conclusion of the official business Mr. C. S. Garland, President of the Association, addressed the Section on the subject of the forthcoming Chemical Congress. The prestige of the Association, he said, had now been further enhanced by the invitation extended to it to participate in the Congress where all important societies of chemists were to be represented. He hoped and was assured that every effort would be made to cause members to take an active interest in the Congress. The B.A.C. had arranged a discussion on " Chemistry House " for the afternoon of Tuesday, July 20, and this meeting should be a great success, being a subject which must interest all chemists.

Mr. Garland presented the Congress programme item by item, and stated that in so excellent a series of papers it was almost invidious to make distinctions. The Messel Memorial Lecture was in any case a great event, the presidential address of the Institute of Chemical Engineers should be of unusual interest, and the exhibition of chemical plant should not be missed. The subject of corrosion would be of universal appeal, as should be the question of the production of sugar from wood. The garden party at the Royal Botanical Gardens would give an opportunity for all members of the Congress to meet, and he hoped that full advantage would be taken of this opportunity.

Unemployment Benefit Fund

Mr. J. B. P. Harrison then addressed the meeting on the subject of the increase in the Unemployment Benefit Fund subscription. He stated that the fund had done most valuable work, and so extensive had been its activity that it had been necessary to charge the fund with the expenses of its administration. The scheme had provided for the creation of a reserve. This had not yet reached the amount which would make it possible for the fund to meet every eventuality, so that an increase in unit subscription was, in the opinion of the committee, necessary.

In reply, Mr. Garland stated that he realised that, in the circumstances, an increase was necessary, but he thought that the ideal of administering the fund without making any charge upon it should be kept in view; with an increase in membership this should be possible.

After some discussion, it was agreed that the committee had been wise to recommend the increase, which, having regard to the very valuable work of the fund, should meet with no opposition.

In the absence of Mr. Rhodes, Dr. Harris presented the General Secretary's report upon the area scheme of the London Section, which consisted of a detailed analysis of the numerical strength of the various sub-sections. It was suggested that sub-section secretaries, and, if agreed by the sub-committee, members of the sub-sections, should receive a list of the names of those resident in their area. As the report indicated that it was possible that work could immediately be commenced in some sections, a gratifying response for volunteers to assist in the sub-section organisation was received.

Indian Chemical Notes

[FROM OUR INDIAN CORRESPONDENT.]

Bombay Match Industry

UNDER the protective duty imposed by the Government of India, the match industry in Bombay has made rapid progress during the last three or four years. There are now 14 match factories in this Presidency, seven of which have been established in the suburbs of Bombay. Their approximate total output is estimated at 30 to 40 lakhs gross boxes annually, and while two or three factories use indigenous wood, all the others import and use match wood logs from foreign countries. The total quantity of wood consumed by the factories is at present about 20,000 tons a year. The Forest Department has now been asked to carry on investigations in the forests as regards the supply of wood suitable for match making purposes. One of the factories in the Presidency is a Swedish enterprise.

Education in Forestry

In response to the demand of Indian leaders that India should be made self-contained in the matter of education in forestry, the Government of India have decided to inaugurate from November 1, 1926, at the Forest Research Institute and College at Dehra Dun, a course of instruction in forestry up to the standard required for the Indian Forest Service. The course of instruction will extend over a period of two years, and students qualifying at the end of that term will be awarded a diploma. The training will follow the lines which have proved satisfactory at Cooper's Hill and at the Universities of Oxford, Cambridge, and Edinburgh. Arrangements will be made to ensure that the training which it is proposed to give at Dehra Dun shall be in no way inferior to that now obtainable at the forestry schools in Great Britain.

Wagon Manufacture

The Peninsular Locomotive Co., Ltd., which was originally started for the manufacture of locomotives in India under the guarantee given by the Government, had to change its object some time ago because the Government was unable to keep its agreement. The company has had to concentrate on wagon manufacture. According to the report for the past year, all the machinery and plant have now been fully installed and the manufacture of wagons has been begun. The works are capable of an output of 1,000 wagons per year. The company has been able to secure an order for the manufacture of 480 wagons for Government railways during the present year, the total amount of the orders reaching more than Rs. 40 lakhs.

The Cement Industry

The chairman of the directors of the Bundi Cement Co., at the annual meeting held recently, expressed his opinion that conditions in the cement industry in India have materially changed since the Government of India decided against giving protection to the industry. Protection was refused on the ground that the real cause of low price was the keen competition among companies in India, and not imports. It is now contended that this state of things has passed away and that if protection were granted India would be self-contained in the matter of cement supply.

Artificial Silk from Chitin

WORK is being continued in the Kaiser Wilhelm Institute by Professor Herzog and Dr. Kunicke on the production of silk from chitin, as announced some little time ago. Such silk has a close chemical relationship to natural silk, and is therefore quite distinct from ordinary artificial silk, which is cellulosic. The necessary chitin is obtained from the shells of lobsters, crayfish, crabs, etc., and from the wing-cases of locusts and beetles. The silk threads obtained are slightly stronger than those of real silk. Although details of the process are kept secret, it is known that the method is at present too expensive for commercial purposes.

Education of Works Employees

Results in Gas Industry

At the Eighth Annual Conference of the Association for Education in Industry and Commerce, at Birmingham, on Thursday, June 10, a paper by Mr. F. W. Goodenough, C.B.E., entitled "What Education Is Doing for the Gas Industry," was read.

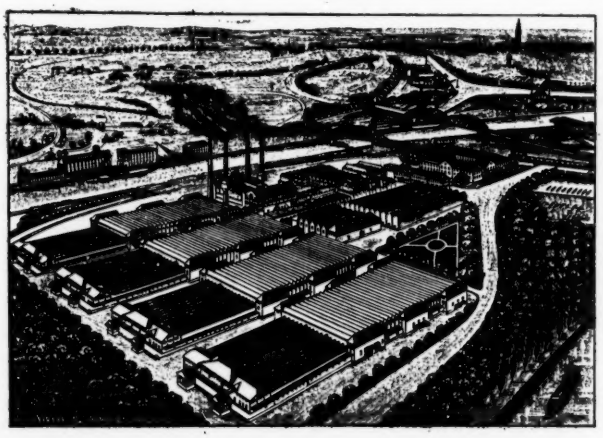
Mr. Goodenough said that the first question asked in this connection was always: Does the education of employees pay? That, put baldly, was the gist of many queries raised by many employers when they were pressed to give consideration and support to the education of their adolescent and adult employees. What would the firm, the shareholders, the partners, "get out" of it? Speaking not merely as Chairman of the Advisory Committee on Education to the Institution of Gas Engineers, but as the head of a department of the Gas Light and Coke Company employing some 5,000 officers and men, and having fortunately at its head a man—the Governor, Mr. D. Milne Watson, M.A.—who was an ardent advocate of education of employees, he could answer those questions very definitely in the affirmative, after an experience of nearly 20 years of schemes for the education and training of workmen and staff.

He was certain, beyond the possibility of a doubt, from his own actual experience and observation, that money spent on properly devised and efficiently operated schemes of this kind was a sound and highly remunerative investment, not an "expense" at all, in the generally accepted sense of the word. Money spent on education did not increase costs; it reduced them. It profited him who gave and him who received. It increased the earnings of the employee, because it increased his value to the employer. It had increased the earnings of employees because it had in fact increased their value. The Gas Light and Coke Company had increased the maximum rates of pay of certain classes of officers in their service, and the annual increments of pay whereby the maximum rates were reached, because they had found that they were getting more valuable employees as the result of their improved education and training.

They had been able to promote to staff positions of substantial present value and good future prospects a higher proportion of lads entering their service from elementary schools than they could find worthy of promotion before their educational schemes came into operation. They had been able to give much improved service to the community as the result of possessing a better average quality of employee; and they had consolidated their existing business, increased their rate of progress, and improved their future prospects, as a result of the better service they had been able to render by means of a better educated staff of officers and workmen. These were facts within his personal knowledge.

Strasbourg Artificial Fibre Works

The following illustration shows the general plan of the new artificial fibre works of the Soieries de Strasbourg, recently opened at the Pont du Petit-Rhin, to which reference was made in our Dyestuffs Supplement last week.



Chemical Matters in Parliament

Chemical Treatment of Flour

Sir Kingsley Wood (House of Commons, June 14), replying on behalf of the President of the Board of Trade, informed Mr. Harland that Sir P. Cunliffe-Lister had no knowledge of grain being treated with chlorine gas or other chemicals before or after importation. The Departmental Committee investigating the whole question had not yet reported, and until their report was received it was not desirable to introduce legislation whereby purchasers of flour might ascertain whether they were being supplied with treated or untreated flour.

Poison Gas Experiments

Captain W. Benn (House of Commons, June 14) asked the Secretary of State for War why no fewer than 2,131 animals, as disclosed by the War Department, were subjected to gas poisoning experiments in this country between May, 1923, and January, 1926; and whether, in view of the Washington Conference Treaty, 1922, and the Geneva Protocol, 1925, against the use of poison gas in warfare, which had been ratified by 31 States, it was necessary to continue these experiments.

Sir L. Worthington-Evans replied that unfortunately the animals were essential in order to obtain the necessary data for ensuring adequate defence and evolving efficient methods of treatment for gas casualties. The Government did not feel that the agreements referred to justified it in omitting to take all possible precautionary measures to protect the Forces of the Crown and the inhabitants against gas attacks in war, and because of this the experiments would continue.

Synthetic Indigo Prices

Mr. Duckworth (House of Commons, June 15) asked the President of the Board of Trade the present prices of American synthetic indigo, and whether he would make inquiries into the complaint of traders concerned that British users have paid approximately half as much again as the rest of the world for indigo ever since the Ruhr occupation and the seizure of the German colour stocks.

Sir P. Cunliffe-Lister stated that the latest quotations for synthetic indigo (20 per cent. paste) in the United States, of which he was aware, were 14 to 14½ cents. per lb. for small quantities, with reductions to about 13 cents. for contracts. He knew that owing to the abnormal situation caused by the seizure of certain German colour stocks during the Ruhr occupation, synthetic indigo could be purchased in France and Belgium at very low prices for a time, but in view of the comparatively small margin at present between British and German prices, he did not think any useful purpose would be served by the suggested inquiry.

Chemists' Pay

Mr. Clynes (House of Commons, June 15) (for Mr. W. Thorne) asked the Financial Secretary to the Treasury if his attention had been drawn to the decision of the Industrial Court in connection with the Government chemists, who are employed upon an agreed scale of pay; if he was aware that the Department sought to reduce the agreed amount of increments of the scale; that the Court stated that it was high-handed action on the part of the Department, and that the Department should have taken the matter to Court before taking any administrative action; and if he could give any reasons why the Department departed from the usual course of procedure? Mr. Ronald McNeill replied that he had seen the decision of the Industrial Court on a claim brought before them by the staff side of the Departmental Whitley Council of the Government Laboratory regarding the rate of annual increment of chemists, Class II, in that Department, by which the Court confirmed, as from the date of their award, the view of the official side of the council. The hon. member was under a misapprehension in describing the increment and scale as agreed amounts, and the Court did not state that the action of the Department was high-handed. With regard to the last part of the question, he could not accept the view implied by the hon. member that the procedure adopted had been irregular.

Two drugs, ethanarsanol and propanarsanol, have, according to an American announcement, been used effectively by Professor Lovenhart, of the University of Wisconsin, for combating sleeping sickness.

From Week to Week

A PETITION is being extensively signed by his constituents in Carmarthen asking Sir Alfred Mond, who recently retired from the Liberal party, to retain the seat for the duration of the present Parliament.

TWO PERSONS WERE KILLED in an explosion which occurred on Wednesday, June 9, at a Swiss munitions factory at Altdorf, while a mixture for smoke-screen tests, of which phosphorus formed the principal ingredient, was being prepared.

DR. ELLWOOD HENDRICK, of New York, has arrived in England and is staying at the Chemical Industry Club. He is one of the earliest of the overseas delegates to the annual meeting of the Society of Chemical Industry in London in July.

THE INTERNATIONAL FOUNDRY AND ALLIED TRADES EXHIBITION, at the Royal Agricultural Hall, Islington, was opened last week by Sir Robert Hadfield, and will remain open until Juné 19. In addition to the ordinary exhibits, there are displays representing research work in the Research Department of Woolwich Arsenal and in various universities.

RESPONDING TO THE TOAST of "British Trade," at the annual banquet of the Federation of Master Printers and Allied Trades in London, Sir Max Muspratt said that a great leadership had surmounted the strike, and had not the unfortunate coal stoppage been prolonged the country would now have been experiencing that boom in trade which they had long anticipated.

THE ACTION OF RAIN ON LIME caused a fire in a timber-yard at Folkestone on Saturday, June 12. A lorry loaded with timber was standing in a yard, and underneath the wood, which was covered with tarpaulins, was a quantity of lime in sacks. The rain percolated through to the lime, which, becoming heated, set fire to the timber. A number of firemen were affected by the fumes before the fire was extinguished.

AT THE INQUEST recently held on George Hobson, of Aston, it was stated that he had been employed for four or five years as a journeyman coppersmith. His health broke down, and for twelve years before his death he was in receipt of compensation from his late employer. Medical evidence showed that death was due to heart failure, brought about by either lead or copper poisoning of long standing. A verdict in accordance with the medical testimony was recorded.

COURTAULDS are to commence production of acetate silk at their Wolverhampton factory, thus marking an important step in the history of the company and of the industry in this country. It is felt that artificial silk produced by the acetate process is becoming more popular, and that the latest step taken by Courtaulds will allow them to sell both viscose and acetate yarns to manufacturers who wish to produce the beautiful cross-dye effects obtainable on cloths made up of the two silks.

INTERNATIONAL COMBUSTION, LTD., of Africa House, Kingsway, announce that their associated company in France has received an important order from Compagnie Parisienne de Distribution d'Electricité for their new central station at Issy les Moulineaux, Paris. This order covers the installation of "Lopulco" pulverised fuel equipment to operate three boilers, each having 19,400 sq. ft. heating surface. This order also includes the installation of Murray fin furnace walls and the supply of air heaters for the above boilers. Other features relating to efficient steam generation are at present under consideration, in which the Foyers Automatiques are actively interested.

INTERNATIONAL COMBUSTION, LTD., grinding and pulverising offices, 11, Southampton Row, London, report the sale of repeat order for latest type 8 ft. dia. by 36 in. Hardinge Conical Ball Mill complete with chrome lining, balls, motor and classifier for the wet grinding of lead zinc ore from 1½ in. to 48 mesh, for Spain; 4½ ft. dia. Hardinge Conical Ball Mill for the dry grinding of sillimanite, a tough and abrasive material, for England; Raymond Pulveriser, complete with air separator for grinding barium peroxide, for England; Raymond separating plant for separating fuller's earth, for England; and one 4 ft. and one 8 ft. heavy type 39 Hum-mer electric screens for screening abrasive pyrite, to produce 1½ in. and ½ in. products, for Cyprus.

THE COUNCIL OF THE COKE OVEN MANAGERS' ASSOCIATION has appointed a research committee, consisting of Messrs. P. B. Nicholson, of Wath-on-Dearne (president), E. Escott Wood (vice-president), J. W. Lee (treasurer), G. Chrisp (chairman, Southern Section), C. P. Finn (chairman, Midland Section), A. H. Middleton (Northern Section), and T. Westthorp (general secretary). This committee represents every area in the country, the members of the Association being responsible for over half the coal carbonised in the country. This committee proposes that a scheme of carbonisation and by-product research shall be carried out under the general supervision of a central authority, such as the Fuel Research Board, with its highly organised staff and well-equipped experimental station. The central authority, in its turn, will have devolutionary power to allocate particular problems to suitable Universities.

DR. F. G. COTTRELL, director of the United States Fixed Nitrogen Research Laboratory, has come to Europe to study the progress being made in nitrogen fixation in various countries here.

RECENT WILLS INCLUDE: Mr. William Goodman, chemical manufacturer, of Chingford, £5,766; Mr. Frederick Olive Chater, glass and lead merchant, a director of Joseph Chater and Sons, Ltd., £10,490.

DR. MILNE WATSON, governor and managing director of the Gas, Light and Coke Company, gave evidence on Wednesday, June 16, before a Select Committee of the House of Commons on behalf of the company's bill to secure additional borrowing powers.

DR. V. G. JOLLY, chief chemist to the Walpamur Co., gave an interesting lecture on water paints and oil paints, following the distribution of prizes at the University College of the South West, at Exeter on Thursday, in connection with the local building construction course.

PROFESSOR GRINNELL JONES, of the industrial chemistry department, Harvard University, who has since 1921 served in an advisory capacity on chemical matters for the U.S. Tariff Commission, has resigned from this connection, and will continue consulting work on the economic phases of the chemical industries.

THE NEW LABORATORIES of the Pharmaceutical Society of Great Britain, which have been provided over the Society's Examination Hall in Bloomsbury Square, London, were opened on Wednesday, June 16, by Mr. Chamberlain, the Minister of Health. They will be used for drug testing, research work of various kinds, and devising new methods of combating disease.

MR. D. MILNE WATSON (president of the National Gas Council) was elected vice-president at the opening of the annual conference of the Association for Education in Industry and Commerce, opened in Birmingham on Wednesday, June 9, and Major T. Knowles (Boots' Pure Drug Co.) presented the hon. secretary with a case of cutlery and a silver cigarette box in recognition of his services.

MR. G. S. W. MARLOW, B.Sc., F.I.C., has been released by the Association of British Chemical Manufacturers to devote part of his time to the appointment of secretary and editor of the Faraday Society and secretary of the Institute of Physics, pending the completion of final arrangements for carrying on the official work of these bodies. Mr. Marlow was assistant secretary to the Institute of Chemistry from 1919-1925.

JUDGE T. B. LEIGH granted an application at the Manchester County Court on Tuesday for the winding up of Fox and Co. (Chemicals), chemical agents and factors, of Atkinson Street, Manchester. On behalf of the petitioners, the Manchester and County Bank, it was stated that the company had only had a short existence, as it was started in December, 1923, with a nominal capital of £2,000. The bank had advanced money to the extent of £635 and had recovered judgment without result.

RESEARCH CHEMISTS WITH A GOOD HONOURS DEGREE and research experience (salary £175-£15-£235, plus Civil Service bonus); one or more assistants (£250-£20-£350, plus bonus); and analysts (£200 to £250, according to qualifications) are required at the Fuel Research Station, East Greenwich, in connection with the Physical and Chemical Survey of national coal resources. Applications to the Secretary, Department of Scientific and Industrial Research, 16, Old Queen Street, Westminster, S.W.1, not later than July 3.

AT A MEETING of the Board of Directors at the Aberdeen Royal Infirmary the plans of a laboratory of clinical chemistry to be erected at the infirmary, approved by a joint committee of the University Court and the Infirmary Board, were submitted along with an agreement in connection with the upkeep of the laboratory and the appointment of a University Lecturer in Clinical Chemistry, who would also be appointed clinical chemist at the infirmary. The plans were approved and instructions given to proceed with the erection of the laboratory.

THE MANCHESTER SECTION of the Society of Chemical Industry, with the assistance of Provincial Exhibitions, Ltd., propose holding a national exhibition from November 16 to 27, in Manchester at the City Exhibition Hall, covering coal products, chemical products and chemical engineering. The exhibition has received the support of the Society of Chemical Industry, the Fuel Section, the Coke Oven Managers' Association, the Institution of Gas Engineers, and other organisations. It is hoped that the Coke Oven Managers' Association will be able to arrange their annual general meetings in Manchester during the period of the exhibition. The Fuel Section of the Society, with the assistance of the local section and the Coke Oven Managers' Association, propose to organise a tar symposium to which all interested directly or indirectly in the subject of the production and utilisation of tar and its products will be invited.

Obituary

MR. IGNATIUS SINGER, Parkfield Road, Bradford, aged 73. From 1901 till his death he held the appointment of analytical chemist to the Bradford Dyers' Association. He was born in Hungary, and first came to England in the 'eighties.

References to Current Literature

British

ALKALOIDS.—The morphine group. Part IV. A new oxidation product of codeine. R. S. Cahn and R. Robinson. *Chem. Soc. Trans.*, April, 1926, pp. 908–912.

ALKYLATION.—Applications of thallium compounds in organic chemistry. Part III. Alkylations. C. M. Fear and R. C. Menzies. *Chem. Soc. Trans.*, April, 1926, pp. 937–940.

COAL.—A contribution to the study of the coking of coals, and a proposed standard method for the determination of the agglutinating value of coal. M. Barash. *J.S.C.I.*, June 4, 1926, pp. 151–160T.

COMBUSTION.—Gaseous combustion in electric discharges. Part I. The combustion of electrolytic gas in direct current discharges. G. I. Finch and L. G. Cowen. *Roy. Soc. Proc.*, May, 1926, pp. 257–280.

ETHER.—Alum as a catalyst for the production of ether. S. K. K. Jatkar and H. E. Watson. *J.S.C.I.*, June 4, 1926, pp. 168–170T.

FOODSTUFFS.—The conditioning of wheat. J. S. Remington. *Ind. Chem.*, May, 1926, pp. 203–207.

GENERAL.—Dangerous chemicals. Part III. H. J. Phillips. *Ind. Chem.*, May, 1925, pp. 197–200.

The mining and refining of barytes. *Ind. Chem.*, May, 1926, pp. 213–220.

The employment of high pressures in chemical industry. E. B. Maxted. *J.S.C.I.*, May 28, 1926, pp. 366–370.

GRINDING.—Some recent research in the science of fine grinding done by the British Portland Cement Research Association between 1923–1925. G. Martin. *J.S.C.I.*, June 4, 1926, pp. 160–163T.

HYDROLYSIS.—The hydrolytic action of low-pressure superheated steam on salts of the alkaline-earth metals. P. L. Robinson, H. C. Smith and H. V. A. Briscoe. *Chem. Soc. Trans.*, April, 1926, pp. 836–839.

Determination of the rate of hydrolysis of sparingly soluble esters. R. C. Smith and H. A. Paterson. *Chem. Soc. Trans.*, April, 1926, pp. 940–941.

KETONES.—The manufacture of acetone. W. G. Cass. *Ind. Chem.*, May, 1926, pp. 200–201.

Elimination of the amino group of tertiary amino-alcohols. Part III. A new method for the preparation of optically active ketones. A. McKenzie, R. Roger and G. O. Wills. *Chem. Soc. Trans.*, April, 1926, pp. 779–791.

NITRATION.—The nitration of benzamidines. R. Forsyth, V. K. Nimkar and F. L. Pyman. *Chem. Soc. Trans.*, April, 1926, pp. 800–808.

SOAP SOLUTIONS.—The relative concentrations of various electrolytes required to salt out soap solutions. J. W. McBain and A. V. Pitter. *Chem. Soc. Trans.*, April, 1926, pp. 893–898.

SUGARS.—The constitution of the disaccharides. Part X. Maltose. C. J. A. Cooper, W. N. Haworth and S. Peat. *Chem. Soc. Trans.*, April, 1926, pp. 876–880.

SYSTEMS.—The ternary system sodium thiosulphate—sodium sulphate—water. R. R. Garran. *Chem. Soc. Trans.* April, 1926, pp. 848–855.

The ternary system sodium sulphide—sodium sulphate—water. A. R. Hogg. *Chem. Soc. Trans.*, April, 1926, pp. 855–862.

VALENCY.—Researches on residual affinity and co-ordination. Part XXVI. A quadridentate group in combination with bivalent metals. G. T. Morgan and J. D. Main Smith. *Chem. Soc. Trans.*, April, 1926, pp. 912–921.

United States

ADSORPTION.—Studies in adsorption. Part XIII. N. R. Dhar and S. Ghosh. *J. Phys. Chem.*, May, 1926, pp. 628–642.

CARBONATES.—Velocity of thermal decomposition of carbonates. B. Bruzs. *J. Phys. Chem.*, May, 1926, pp. 680–693.

FUEL.—Manufacture of motor benzol. E. L. Hall. *Chem. Met. Eng.*, May, 1926, pp. 289–292.

When is gasoline satisfactory as motor fuel? H. C. Dickinson. *Chem. Met. Eng.*, May, 1926, pp. 293-295.

GENERAL.—Cost analysis in chemical production. Part II C. Tyler. *Chem. Met. Eng.*, May, 1926, pp. 278–282.

Power for chemical plants. J. L. McK. Yardley. *J. Ind. Eng. Chem.*, May, 1926, pp. 505–512.

LUBRICATION.—The rôle of oiliness in industrial lubrication. W. C. Wilharm. *J. Ind. Eng. Chem.*, May, 1926, pp. 463–467.

The rôle of graphite in lubrication. F. L. Koethen. *J. Ind. Eng. Chem.*, May, 1926, pp. 497–499.

NITROGEN FIXATION.—A laboratory study of nitrogen fixation in the high tension arc. H. V. Tartar and M. F. Perkins. *J. Phys. Chem.*, May, 1926, pp. 595–616.

OILS.—Chemical engineering applications in an oil refinery. S. D. Kirkpatrick. *Chem. Met. Eng.*, May, 1926, pp. 270–273.

Research in the petroleum industry. B. T. Brooks. *J. Ind. Eng. Chem.*, May, 1926, pp. 518–523.

SPECTROSCOPY.—The ultraviolet absorption spectrum of formic acid. H. C. Ramsperger and C. W. Porter. *J. Amer. Chem. Soc.*, May, 1926, 1267–1273.

Ultraviolet absorption of a series of eight organic substances of the γ-pyridone type in water solution. E. R. Riegel and M. C. Reinhard. *J. Amer. Chem. Soc.*, May, 1926, pp. 1334–1345.

The absorption spectra of resorcinol-benzein. W. R. Orndorff, R. C. Gibbs and C. V. Shapiro. *J. Amer. Chem. Soc.*, May, 1926, pp. 1327–1333.

SUGARS.—Relations between rotatory power and structure in the sugar group. Parts XIII and XIV. C. S. Hudson. *J. Amer. Chem. Soc.*, May, 1926, pp. 1424–1443.

SYSTEMS.—Studies on the system calcium oxide—ferric oxide—silica. W. C. Hansen and R. H. Bogue. *J. Amer. Chem. Soc.*, May, 1926, pp. 1261–1267.

THIAZOLES.—Researches on thiazoles. Part XI. M. T. Bogert and R. W. Allen. *J. Ind. Eng. Chem.*, May, 1926, pp. 532–533.

German

ANALYSIS.—The estimation of chromium in chrome iron ore. A. Franke and R. Dworzak. *Z. angew. Chem.*, May 27, 1926, pp. 642–644.

Method for the titrimetric determination of hydrosulphite. H. Roth. *Z. angew. Chem.*, May 27, 1926, pp. 645–646.

Is the Kjeldahl method for nitrogen determination applicable to organic compounds in general? K. Kürschner. *Z. anal. Chem.*, No. 6, 1926, pp. 209–216.

Electro-analytic determination of nickel in nickel steel, etc. W. Moldenhauer. *Z. angew. Chem.*, May 27 1926, pp. 641–642.

BERYLLIUM.—Beryllium and its preparation. W. Illig. *Z. Metallkunde*, May, 1926, pp. 159–160.

DRUGS.—The synthesis of adrenalin. E. Ott. *Ber.*, May 5, 1926, pp. 1068–1072.

GENERAL.—Chemical forces in the light of the latest physical investigation. H. Ulich. *Z. angew. Chem.*, May 27, 1926, pp. 633–637.

OXIDATION.—The oxidation of aliphatic amines and amino acids. S. Goldschmidt and W. Beuschel. *Annalen*, April 22, 1926, pp. 197–210.

PHOTOGRAPHY.—Progress in photography. W. Meidinger. *Z. angew. Chem.*, May 27, 1926, pp. 628–633.

POLYMERISATION.—Highly polymerised compounds. Part VII. Dicyclopentadiene and further polymerised cyclopentadienes. Part IX. The polymerisation of cyclopentadiene. H. Staudinger and H. A. Bruson. *Annalen*, April 22, 1926, pp. 97–122.

TANNING.—The processes in chrome tanning. S. Hilpert and E. Schlumberger. *Z. angew. Chem.*, May 27, 1926, pp. 637–640.

THALLIUM COMPOUNDS.—Crystalline-liquid thallous salts of organic acids. R. Walter. *Ber.*, May 5, 1926, pp. 962–972.

UREA.—Urea derivatives. E. Fromm. *Annalen*, April 22, 1926, pp. 259–313.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

251,313. Dyestuffs and Intermediates, Manufacture of. R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Murrell Hill Works, Carlisle. Application dates, October 21 and November 12, 1924.

It has been found that when benzanthrone is treated with manganese dioxide and sulphuric acid, one of two reactions may take place, a condensation of two benzanthrone molecules or an oxidation of benzanthrone. In the first case a dibenzanthronyl is obtained which differs from that previously known in that it does not yield a dioxy-dibenzanthrone on treatment with manganese dioxide and sulphuric acid. The oxybenzanthrone obtained in the second case can be alkylated and the product fused with caustic alkali. The dibenzanthronyl may be subjected to alkali fusion to obtain dibenzanthrone of high purity. Examples are given.

251,321. Thioindigo Derivatives, Manufacture of. H. Dodd, W. C. Sprent, and The United Alkali Co., Ltd., Cunard Building, Liverpool. Application date, December 29, 1924.

A dichlorbenzene is treated with chlorsulphonic acid, and the dichlorbenzole sulphonic chloride is settled out by adding water. The chloride is reduced, the product being distilled to obtain dichlorthiophenol which is treated with chloracetic acid and caustic alkali in aqueous solution. This product is then acidified to obtain dichlorphenyl-thioglycollic acid. The latter is treated with sulphuric acid to obtain a tetrachlorthioindigo. The use of solvents is avoided in this process.

251,331. Apparatus for obtaining Intimate Contact between Gases and Liquids. The British Oxygen Co., Ltd., Angel Road, Edmonton, Middlesex, and C. R. Houseman, of the British Oxygen Co., Ltd., Wembley, Middlesex. Application date, January 28, 1925.

This apparatus is built up of metal plates which are alternately corrugated and plain, the spaces being less than one-tenth of a millimetre in width, so that the element acts in the manner of a sponge. The liquid is retained in the capillary passages so that when gas is forced through a froth or foam is produced.

251,404. Cracking Oils, Method and Apparatus for. T. E. Robertson, London. From Power Specialty Co., 111, Broadway, New York. Application date, March 24, 1925.

In order to avoid overheating of oil cracking retorts, the air for combustion of the fuel is supplied in excess of the amount necessary, so that a large volume of heating gases of relatively low temperature is obtained. The air supply is preheated by the exhaust gases, so that a good thermal efficiency is obtained.

251,495. Hydrochloric Acid from Ferrous Chloride Solutions, Process for the Recovery of. R. Ensoll, "Aberdour," Durham Road, Stockton-on-Tees. Application date, August 6, 1925.

The ferrous chloride solution, which may be galvaniser's waste pickle acid, is gradually run into a bath of sulphuric acid at a temperature of 115°–125° C. Hydrochloric acid gas and water vapour are evolved and are passed to a water-cooled condenser. The reaction can be carried out in cast iron vessels of small dimensions.

251,511. Basic Dyestuffs of the Malachite Green Series. A. G. Bloxam, London. From Chemische Fabrik Griesheim-Elektron, Offenbach-on-Main and Frankfort-on-Main, Germany. Application date, September 23, 1925.

These dyestuffs are obtained by condensing a 2 : 3 : 5-trichlorobenzaldehyde or 2 : 3 : 4 : 5-tetrachlorobenzaldehyde with two molecules of an *N*-mono- or di- alkyl derivative of an arylamine or a mixture, and oxidising the leuco base obtained. The 2 : 3 : 5-trichlorobenzaldehyde is obtained from 2 : 3 : 5-trichlorotoluene in the usual manner, and melts at 75°–76° C. The 2 : 3 : 4 : 5-tetrachlorobenzaldehyde is obtained by passing chlorine and air through a solution of 4-chloro-aceto-*o*-toluidine, saponifying the 3 : 4 : 5-trichloro-aceto-*o*-toluidine, and exchanging the NH_2 group for chlorine by the Sandmeyer reaction. The 2 : 3 : 4 : 5-tetrachlorotoluene is chlorinated in the side chain, and the 2 : 3 : 4 : 5-tetrachlorobenzal chloride saponified. Examples are given.

Note.—Abstracts of the following specifications which are now accepted appeared in The Chemical Age when they became open to inspection under the International Convention: 226,518 (General Chemical Co.), relating to manufacture of sulphuric acid by contact process, see Vol. XII, p. 185; 228,879 (Metallbank und Metallurgische Ges. Akt.-Ges.), relating to recovery of absorbed substances, see Vol. XII, p. 382; 229,283 (Metallbank und Metallurgische Ges. Akt.-Ges. and W. Gensecke), relating to purification of oils and fats by means of soda, see Vol. XII, p. 414; 231,190 (M. Melamid), relating to cracking mineral and other hydrocarbon oils, see Vol. XII, p. 537; 231,529 (Farbwerke vorm. Meister, Lucius, and Brüning), relating to azo dyestuffs, see Vol. XII, p. 590; 235,556 (Akt.-Ges. für Anilin Fabrikation), relating to sulphur dyestuffs, see Vol. XIII, p. 176; 241,572 (Soc. of Chemical Industry in Basle), relating to dyestuffs, see Vol. XIII, p. 663; 243,677 (Ges. für Kohlentechnik), relating to sodium bicarbonate and sal-ammoniac, see Vol. XIV, p. 137.

International Specifications not yet Accepted

249,489. Anthracene Derivatives. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, March 18, 1925. Addition to 210,413 (see The Chemical Age, Vol. X, p. 363).

To obtain 1 : 2 and 2 : 1-anthracene-thioglycol-carboxylic acids from 1 : 2 and 2 : 1-halogen-anthraquinone-carboxylic acids, the halogen is exchanged for—SH by means of alkali sulphide, and the product reduced to the corresponding anthracene derivative and condensed with monohalogen acetic acid. Anthraquinone-2-thioglycol-1-carboxylic acid is obtained by condensing a 2-halogen-anthraquinone-1-carboxylic acid with thioglycollic acid, or the 2-mercapto-anthraquinone-1-carboxylic acid with monohalogen acetic acid. The anthracene- and anthraquinone-thioglycol-carboxylic acids may be treated with condensing agents to obtain the corresponding oxythiophene derivatives. These may be oxidised to obtain symmetrical thioindigoid dyestuffs. By condensing the thioglycol-carboxylic acids or the oxythiophene derivatives with isatin, thioisatin, acenaphthene-quinone, naphthoquinone, or their anilides or halides, unsymmetrical thioindigoid dyes are obtained. Examples of all these products are given.

249,493. Hydrogenising Oils, Etc. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, March 19, 1925. Addition to 247,584.

Hydrogenation in the presence of combined sulphur as described in specification 247,584 (see The Chemical Age, Vol. XIV, p. 462) is now applied to rock oils, shale oils, resins, ozokerite, asphalts, etc., the hydrogen being at a pressure of about 200 atmospheres and temperature of 450°-500° C. Light oils are obtained.

249,497. Quinolinic Anhydride. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, March 19, 1925.

Quinolinic acid is heated with acetic anhydride to a temperature below 100° C. in the presence of a catalyst such as pyridine, hydrochloric acid, sulphuric acid, acetyl chloride, a phosphorus halide, or an acid salt.

249,501. Hydrogenising Oils, Bitumens, Etc. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, March 19, 1925. Addition to 247,583.

The process for the hydrogenation of coal which is described in specifications 247,583 and 247,586 (see The Chemical Age, Vol. XIV, pp. 461 and 462) is applied to the treatment of crude mineral or shale oils, residues, asphalts, ozokerite, resins, etc. The mixture is passed over a contact mass of

molybdenum or its compounds, and benzene-like hydrocarbons are obtained.

249,510. ALKALI CHLORIDES AND HYPOCHLORITES. A. Oppé, 38, Lousbergstrasse, Aachen, Germany. International Convention date, March 23, 1925.

A 50 per cent. solution of alkali hydroxide is sprayed in chlorine gas, and the product dried by passing in dry air. A solid mixture of alkali chloride and hypochlorite is obtained.

249,515. SYNTHETIC DRUGS. F. Lehnhoff-Wyld, 92, Rue Michel-Ange, Paris. International Convention date, March 17, 1925. Addition to 232,612.

The products obtained according to specification 232,612 (see THE CHEMICAL AGE, Vol. XII, p. 642) are treated with an aqueous solution of 3 : 3′-diamino-4 : 4′-dihydroxy-arsenobenzene-*N*-methylenesulphonic acid to obtain metallic derivatives of 3 : 3′-diamino-4 : 4′-dihydroxy-arsenobenzene-*N*-methylene-sulphonic acid containing one atom or less of metal per molecule of arsenobenzene.

249,519. EXTRACTING OILS. G. Patart, 50, Rue Spontini, Paris. International Convention date, March 21, 1925.

The mixture of gases and vapours obtained in the synthetic production of methanol is passed upwards through a digester packed with pine wood, and the liquid from the condenser of the methanol plant is passed downwards. The issuing liquid contains methanol, pine oil, acetone, isopropyl alcohol and acetic acid, and the gases contain additional hydrogen, carbon monoxide, methane, ethylene and its homologues. Other examples are given, including the treatment of coal with the gases at 420°-450° C. and 250 atmospheres pressure obtained from the last catalyser in the synthetic production of oxygenated compounds and hydrocarbons.

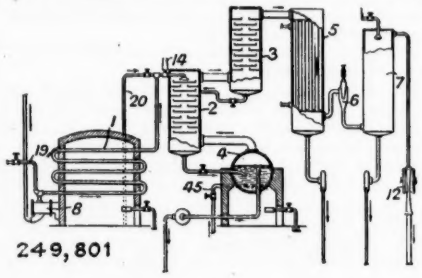
249,549. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, March 20, 1925.

Dyestuffs which yield fine emulsions in water are obtained by mixing unsulphonated dyestuffs having affinity for cellulose acetate with sulphite cellulose lye or a salt of lignin sulphonic acid.

249,555. SILICA GEL. M. Prätorius, 61, Neue Krug-Allee, Treptow, Berlin, and K. Wolf, 85, Kantstrasse, Charlottenburg, Berlin. International Convention date, March 21, 1925.

A silica hydrogel containing 78-95 per cent. of water is kneaded with 1-2 per cent. of 1-10 per cent. colloidal silica solution, moulded, and dried at 100°-180° C., or silica hydrogel may be heated to 150° C. in an autoclave, so that part dissolves as a colloidal solution.

249,801. DISTILLING HYDROCARBON OILS. Simplex Refining Co., 200, Bush Street, San Francisco, Cal., U.S.A. (Assignees of G. A. Kramer, 218, Grant Street, Concord, Cal., and G. H. van Senden, 1531, Altmira Street, Martinez, Cal., U.S.A.) International Convention date, March 30, 1925.

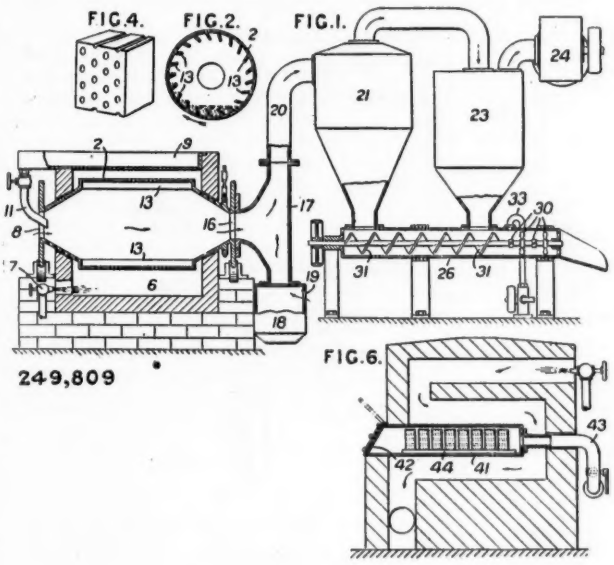


249,801

Topped oil passes through a pump 8 to a still 1 and pressure-reducing valve 14, and thence to a separating chamber 2 containing horizontal trays. Residual oil passes to a still 4, from which the vapour also passes into the separator 2. Vapour then passes through a dephlegmator 3 to a condenser 5 maintained at reduced pressure by a steam jet ejector 6, water-jet condenser 7 and vacuum pump 12. Steam may be added to the oil at 19, 20 and 45, and the pressure in the vessels 2, 3, 4 may be 1 mm. of mercury.

249,809. LEAD OXIDES AND SALTS. Commonwealth White Lead and Paints Proprietary, 475, Collins Street, Melbourne, Australia. International Convention date, March 30, 1925.

Molten lead is fed through a pipe 11 from a melting pot 9 into a rotary drum 2 heated by an oil burner 7. Air is drawn through from 8 to 16 carrying the oxidised lead powder, and the heavier particles are deposited in the vessel 18. The lighter particles pass to settling chambers 21, 23, and thence to a casing 26 to which water is introduced through a pipe 33. Beaters 30 are provided, and a screw conveyer 31 delivers the



249,809

paste to a press which forms it into briquettes shaped as in Fig. 4. The briquettes are partly carbonated by exposure, and then placed in a muffle 41 through which air passes from 42 to 43, the perforations in the briquettes being in line. After 4 hours at 490° C. the briquettes contain 80 per cent. red lead, or they may be wholly converted to yellow monoxide in 2 hours at a higher temperature. White lead is made by treating the briquettes by the stack method.

249,834. TREATING GASES CONTAINING UNSATURATED HYDROCARBONS. Petroleum Chemical Corporation, 30, Broad Street, New York. (Assignees of H. S. Davies, 30, Charles River Road, Cambridge, Mass., U.S.A.) International Convention date, March 30, 1925.

A gas mixture containing propylene and other unsaturated hydrocarbons is freed from water vapour and unsaturated hydrocarbons more reactive to acid than propylene, and then subjected to prolonged contact with 100 per cent. sulphuric acid, to obtain an acid absorption product of propylene capable of hydrolysis to isopropyl alcohol. The gas mixture resulting from the cracking of hydrocarbons may be used, and the plant for carrying out the process is described.

249,860. COMPLEX FLUORIDES. A. F. Meyerhofer, 10, Goethestrasse, Zurich, Switzerland. International Convention date, March 24, 1925.

A rotary tube or reverberatory furnace is used for continuously decomposing salts of complex hydrofluoric acids. Thus, magnesium silicofluoride is produced from magnesium chloride and the hydrofluosilicic acid produced in the furnace, and the silicofluoride is then treated with sulphuretted hydrogen to obtain magnesium sulphide and hydrochloric acid.

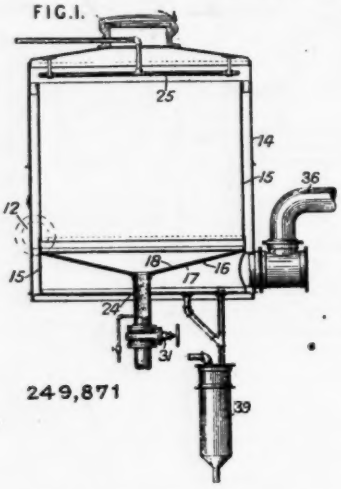
249,883. SYNTHETIC DRUGS AND INTERMEDIATE PRODUCTS. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of Akt.-Ges. für Anilin Fabrikation, Treptow, Berlin.) International Convention date, March 30, 1925.

A halogen methylphthalimide is condensed with an aromatic hydrocarbon or a substitution product with or without a solvent and a catalyst to obtain aralkylated phthalimides. Examples are given of the condensation of chlormethyl-phthalimide with benzene, naphthalene, phenol, methoxy-benzene, guaiacol, 2-nitro-1-methylbenzene, 2 : 4-dimethyl-benzyl-phthalimide, anthracene, etc.

249,871. PURIFYING HYDROCARBONS. Gray Processes Corporation, 961, Freylinghuysen Avenue, Newark, N.J., U.S.A. (Assignees of T. T. Gray, Elizabeth, N.J., U.S.A.) International Convention date, March 24, 1925.

Hydrocarbon vapours are passed through fuller's earth, bone-black, bauxite, kieselguhr, or the like, and a solvent, which may be the condensate from the process, is passed through the catalyst during treatment to remove polymerised

FIG.I.



249,871

products. The catalyst is supported on wire gauge 17 in a vessel 15, and oil vapour is admitted at 12 to the annular space around the vessel 15, and thence through the catalyst to the outlet 36. The solvent is sprayed from a pipe 25, and liquid from the vessel 14 passes through a pipe 24 or trap 39 to the still. Steam up to 400° F. may also be admitted to the chamber 15. Sufficient condensate for dissolving the polymerised products may be formed in the catalyst.

LATEST NOTIFICATIONS.

252,176. Manufacture of alkyl cellulose derivatives. I.G. Farbenindustrie Akt.-Ges. May 15, 1925.

252,182. Process for the manufacture of azo dyestuffs. I.G. Farbenindustrie Akt.-Ges. May 12, 1925.

252,203. Process for the manufacture of solutions. I.G. Farbenindustrie Akt.-Ges. December 22, 1924.

252,211. Process for splitting fats. Petroff, G. May 18, 1925.

252,212. Production of sulpho-aromatic fatty acids. Petroff, G. May 18, 1925.

252,654. Manufacture of new cellulose derivatives. Lilienfeld, Dr. L. May 30, 1925.

252,662. Manufacture of graphite. Akt.-Ges. für Anilin-Fabrikation. May 26, 1925.

252,690. Process for the production of lithium carbonate. Metallbank und Metallurgische Ges. Akt.-Ges. May 29, 1925.

252,693. Production of aluminium oxide. Hoganäs-Billesholms Aktiebolag. May 27, 1925.

252,694. Manufacture of condensation products containing sulphur. I. G. Farbenindustrie Akt.-Ges. May 28, 1925.

252,707. Process for the production of iodised pyridine derivatives. Räth, Dr. C. May 28, 1925.

252,713. Process for preparing, catalytically, alcohols and other oxygenated organic compounds. Casale, L. May 28, 1925.

252,715. Process for the production of shellac substitutes. Scheiber, J., and Noack, W. May 29, 1925.

252,745. Method of manufacturing dyes. Bucherer, H. T. May 29, 1925.

253,068. Manufacture of finely subdivided pigment dyes. Farbwerke vorm. Meister, Lucius, and Brüning. June 8, 1925.

253,094. Manufacture of condensation products from urea or a derivative thereof and formaldehyde. Soc. of Chemical Industry in Basle. June 5, 1925.

253,122. Process for the synthetic production of ammonia. Uhde, G. F. June 4, 1925.

253,128. Process and apparatus for the simultaneous dehydration and the purifying of alcohol. Distilleries des Deux-Sevres. June 4, 1925.

Specifications Accepted with Date of Application

229,678. Alkali cellulose, Process for the production of. H. Hawlik and O. Sindl. February 18, 1924.

251,929. Alloys containing tungsten carbide, Manufacture of. General Electric Co., Ltd. May 7, 1925. Addition to 213,524.

252,039. Fertilisers. W. R. Fielding. December 16, 1924.

252,099. Soluble salts of substituted phenyl-arsinic acids, Preparation of. R. W. E. Stickings and May and Baker, Ltd. July 1, 1925.

252,268. Feeding and/or discharging retorts for distillation or other purposes. A. L. J. Queneau. February 24, 1925.

252,271. Separating solid particles from gases. Chance and Hunt, Ltd., and W. A. S. Calder. February 24, 1925.

Applications for Patents

Abbott, W. H. Recovery of ammonia, ammonium carbonate, etc., in electrolytic precipitation. 12,963. May 21.

Aktieselskapet Norsk Aluminium Co. Manufacture of aluminium oxide. 13,086. May 21. (Norway, May 23, 1925.)

A. P. I. C. E. Soc. Anon Prodotti Italiani Chemici Estrattivi and Gasparrini, O. Manufacture of sodium chloride. 13,831. June 1.

British Dyestuffs Corporation, Ltd. Wetting-out agents or emulsifiers, etc. 14,072. June 3.

British Dyestuffs Corporation, Ltd. Dyeing. 14,185. June 4.

Bucherer, H. T. Manufacture of dyes. 13,782. May 31. (Germany, May 29, 1925.)

Butler, C. Dyeing. 14,185. June 4.

Casale, L. Catalytic preparation of alcohols, etc. 12,997. May 21, (Italy, May 28, 1925.)

Casale, L. Preparation of mixtures of carbon monoxide and hydrogen from hydrocarbons. 13,935. June 2.

Distilleries des Deux-Sèvres. Simultaneous dehydration and purification of alcohol. 14,071. June 3. (Belgium, June 4, 1925.)

Coley, H. E. Apparatus for manufacture of gas. 12,829. May 19.

Cross, C. F., and Viscose Development Co., Ltd., Manufacture of cellulose products. 13,021. May 21.

Drescher, H. A. E., Scottish Dyes, Ltd., Smith, W., and Thomas, J. Production of anthraquinone derivatives. 13,078. May 21.

Dreyfus, H. Manufacture of an aliphatic compound. 13,813. June 1.

Fischer, F. Purification of gases from sulphur. 14,091. June 3. (Germany, June 29, 1925.)

Green, R. Manufacture of cellulose acetate. 12,926. May 20.

Hall, A. J., and Silver Springs Bleaching and Dyeing Co., Ltd. Processes for treating cellulose-acetate silk, etc. 13,919. June 2.

Hall, A. J., and Silver Springs Bleaching and Dyeing Co., Ltd. Processes for treating cellulose-acetate silk, etc. 14,111. June 4.

Higgins, E. B., and United Water Softeners, Ltd. Manufacture of base exchange materials. 12,891. May 20.

I. G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of azo dyestuffs. 12,906. May 20.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of diaminodiaryl urea, etc 13,030. May 21.

I. G. Farbenindustrie Akt.-Ges. Manufacture of solutions. 12,593. May 17. (Germany, December 22, 1924.)

I. G. Farbenindustrie Akt.-Ges. Process of utilising molten crude phosphates. 12,638. May 17. (Germany, May 23, 1925.)

I. G. Farbenindustrie Akt.-Ges. Preparation of dry non-explosive nitro-cellulose. 12,908. May 20. (Germany, May 20, 1925.)

I. G. Farbenindustrie Akt.-Ges. Process for dyeing cotton. 12,928. May 20. (Germany, May 20, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 13,023. May 21. (Germany, May 22, 1925.)

I. G. Farbenindustrie Akt.-Ges. Cleaning, wetting, emulsifying, etc. 13,029. May 21. (Germany, May 22, 1925.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of dibenzanthronyls. 13,731. May 31.

I. G. Farbenindustrie Akt.-Ges. Manufacture of substituted aromatic sulphonic acids. 13,969. June 2. (Germany, June 2, 1925.)

Imai, S., and Urano, S. Manufacture of basic calcium hypochlorites. 12,681. May 18.

Imai, S. Manufacture of pure calcium hypochlorite. 12,682. May 18.

Jutsum, F. R. and Puddefoot, L. E. G. Manufacture of butyric esters of alcohols. 12,694. May 18.

Petroff, G. Process for splitting fats. 12,747. May 18. (Germany, May 18, 1925.)

Petroff, G. Production of sulpho-aromatic fatty acids. 12,748. May 18. (Germany, May 18, 1925.)

Schlumpf, J. Dyeing, etc., apparatus. 12,731. May 18. (Switzerland, June 9, 1925.)

Soc. of Chemical Industry in Basle. Manufacture of condensation products from urea, etc., and formaldehyde. 13,024. May 21. (Switzerland, June 5, 1925.)

Synthetic Ammonia and Nitrates, Ltd. Production of liquid films. 12,780. May 18.

Zaidan Hojin Rikagaku Kenkiyujo. Preparation of maleic and succinic acid from furfurol by electrolysis. 12,751. May 18. (Japan, June 22, 1925.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton; Powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—3d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4¾d. to 5d. per lb. Crude 60's, 1s. 5d. to 1s. 6d.

ACID CRESYLIC 97/99.—1s. 8d. to 1s. 9d. per gall. Pale, 95%, 1s. 6d. to 1s. 7d. per gall. Dark, 1s. 3d. to 1s. 4d. per gall. Steady.

ANTHRACENE.—A quality, 3d. to 4d. per unit.

ANTHRACENE OIL, STRAINED.—7d. to 8d. per gall. Unstrained, 6½d. to 7½d. per gall.

BENZOL.—Crude 65's, 1s. 3d. to 1s. 4d. per gall., ex works in tank wagons. Standard Motor, 1s. 10d. to 1s. 11d. per gall., ex works in tank wagons. Pure, 1s. 10½d. to 2s. 6d. per gall., ex works in tank wagons.

TOLUOL.—90%, 1s. 9½d. to 2s. 1d. per gall. Pure, 2s. to 2s. 6d. per gall.

XYLOL.—2s. to 2s. 6d. per gall. Pure, 3s. 3d. per gall.

CREOSOTE.—Cresylic, 20/24%, 9d. to 10d. per gall. Standard specification, middle oil, heavy, 6½d. to 7d. per gall.

NAPHTHA.—Crude, 9½d. to 1s. 0½d. per gall. according to quality. Solvent 90/160, 1s. 6d. to 2s. per gall. Solvent 90/190, 1s. 1d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 70s. to 80s. per ton.

PYRIDINE.—90/140, 17s. to 20s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. 6d. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7d. per lb. naked at works.

ANILINE SALTS.—7d. to 7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

o-CRESOL 29/31° C.—3d. to 3½d. per lb.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLANILINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. 3d. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—5d. per lb. naked at works.

NITRONAPHTHALENE.—10d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£7 to £9 per ton, according to grade and locality.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.

WOOD TAR.—£3 to £5 per ton, according to grade.

BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¼d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic, 80% B.P.—£39 per ton ex wharf London in glass containers.

Acid, Acetyl Salicylic.—2s. 4d. to 2s. 5d. per lb. Brisk demand.

Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.

Acid, Boric B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

Acid, Camphoric.—19s. to 21s. per lb.

Acid, Citric.—1s. 4d. to 1s. 4½d. per lb., less 5%.

Acid, Gallic.—2s. 8d. per lb. for pure crystal, in cwt. lots.

Acid, Pyrogallic, Crystals.—6s. 7d. per lb. Resublimed, 7s. 3d.

Acid, Salicylic.—1s. 3½d. to 1s. 4½d. per lb. Technical.—10¾d. per lb.

Acid, Tannic B.P.—2s. 10d. per lb.

Acid, Tartaric.—1s. 0½d. per lb., less 5%. Market firm.

Amidol.—8s. 6d. per lb., d/d.

Acetanilide.—1s. 7d. to 1s. 8d. per lb. for quantities.

Amidopyrin.—12s. 6d. per lb.

Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.

Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

Atropine Sulphate.—11s. per oz. for English make.

Barbitone.—9s. per lb.

Benzonaphthol.—3s. 3d. per lb. spot.

Bismuth Carbonate.—12s. 6d. to 14s. 3d. per lb.

Bismuth Citrate.—9s. 6d. to 11s. 3d. per lb.

Bismuth Salicylate.—10s. 3d. to 12s. per lb.

Bismuth Subnitrate.—10s. 9d. to 12s. 6d. per lb. according to quantity.

Borax B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

Bromides.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; ammonium, 2s. 2d. to 2s. 5d. per lb., all spot.

Calcium Lactate.—1s. 3d. to 1s. 4d.

Chloral Hydrate.—3s. 3d. to 3s. 6d. per lb., duty paid.

Chloroform.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

Creosote Carbonate.—6s. per lb.

Formaldehyde.—£40 per ton, in barrels ex wharf.

Guaiacol Carbonate.—7s. 6d. per lb.

Hexamine.—2s. 4d. to 2s. 6d. per lb.

Homatropine Hydrobromide.—30s. per oz.

Hydrastine Hydrochloride.—English make offered at 120s. per oz.

Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.

Hydroquinone.—4s. 3d. per lb., in cwt. lots.

Hypophosphites.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

Iron Ammonium Citrate B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

Iron Perchloride.—20s. to 22s., according to quantity.

Magnesium Carbonate.—Light Commercial, £31 per ton net.

Magnesium Oxide.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

Menthol.—A.B.R. recrystallised B.P., 18s. 9d. net per lb., Synthetic, 12s. 6d. to 15s. per lb., according to quality.

Mercurials.—Red oxide, 5s. 8d. to 5s. 10d. per lb.; Corrosive sublimate, 4s. to 4s. 2d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. 3d. to 4s. 5d. per lb.

Methyl Salicylate.—1s. 5d. to 1s. 7d. per lb.

Methyl Sulphonal.—16s. 6d. per lb.

Metol.—9s. per lb. British make.

Paraformaldehyde.—1s. 9d. for 100% powder.

Paraldehyde.—1s. 4d. per lb. (1s. 2d. in carboys.)

Phenacetin.—4s. per lb.

Phenazone.—6s. per lb.

Phenolphthalein.—4s. per lb.

Potassium Bitartrate 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots.

Potassium Citrate.—2s. to 2s. 1d. per lb.

Potassium Ferricyanide.—1s. 9d. per lb. in cwt. lots. Quiet.

Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity.

Potassium Metabisulphite.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

Potassium Permanganate.—B.P. crystals, 6½d. per lb., spot.

Quinine Sulphate.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

Resorcin.—4s. to 5s. per lb., spot.

Saccharin.—55s. per lb.

Salol.—3s. per lb.

Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.

Sodium Citrate, B.P.C., 1911.—1s. 9d. to 1s. 11d. per lb., B.P.C., 1923. 2s. to 2s. 2d. per lb., according to quantity.

Sodium Ferrocyanide.—4d. per lb. carriage paid.

Sodium Hyposulphite, Photographic.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

Sodium Nitroprusside.—16s. per lb.

Sodium Potassium Tartrate (Rochelle Salt).—75s. to 80s. per cwt., according to quantity.

Sodium Salicylate.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.

Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

Sulphonal.—11s. per lb.

Tartar Emetic, B.P.—Crystal or Powder, 1s. 10d. to 1s. 11d. per lb.

Thymol.—12s. to 13s. 9d. per lb.

Perfumery Chemicals

Acetophenone.—10s. per lb.

Aubepine (ex Anethol).—10s. per lb.

Amyl Acetate.—3s. per lb.

Amyl Butyrate.—5s. 6d. per lb.

Amyl Salicylate.—3s. 3d. per lb.

Anethol (M.P. 21/22° C.).—6s. per lb.

Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 3d. per lb.

Benzyl Alcohol free from Chlorine.—2s. 3d. per lb.

Benzaldehyde free from Chlorine.—2s. 6d. per lb.

Benzyl Benzoate.—2s. 9d. per lb.

Cinnamic Aldehyde Natural.—20s. per lb.

Coumarin.—11s. 9d. per lb.

Citronellol.—15s. per lb.

Citral.—9s. 6d. per lb.

Ethyl Cinnamate.—10s. per lb.

Ethyl Phthalate.—3s. per lb.

Eugenol.—10s. per lb.

Geraniol (Palmarosa).—20s. per lb.

Geraniol.—6s. 3d. to 11s. 6d. per lb.

Heliotropine.—5s. 9d. per lb.

Iso Eugenol.—14s. per lb.

Linalol ex Bois de Rose.—19s. per lb.

Linalyl Acetate.—20s. per lb.

Methyl Anthranilate.—9s. 3d. per lb.

Methyl Benzoate.—5s. per lb.

Musk Ketone.—34s. 6d. per lb.

Musk Xylol.—8s. per lb.

Nerolin.—4s. per lb.

Phenyl Ethyl Acetate.—12s. per lb.

Phenyl Ethyl Alcohol.—9s. 6d. per lb.

Rhodinol.—27s. 6d. per lb.

Safrol.—1s. 8d. per lb.

Terpineol.—1s. 6d. per lb.

Vanillin.—21s. 6d. to 23s. per lb.

Essential Oils

Almond Oil.—11s. 6d. per lb.

Anise Oil.—3s. 1d. per lb.

Bergamot Oil.—28s. 6d. per lb.

Bourbon Geranium Oil.—11s. per lb.

Camphor Oil.—60s. per cwt.

Cinnamon Oil, Leaf.—6d. per oz.

Cassia Oil, 80/85%.—9s. 3d. per lb.

Citronella Oil.—Java, 85/90%, 2s. 8d. Ceylon, 2s. per lb.

Clove Oil.—6s. 3d. per lb.

Eucalyptus Oil, 70/75%.—1s. 10d. per lb.

Lavender Oil.—French 38/40%, Esters, 20s. per lb.

Lemon Oil.—7s. 9d. per lb.

Lemongrass Oil.—4s. 6d. per lb.

Orange Oil, Sweet.—11s. 9d. per lb.

Otto of Rose Oil.—Bulgarian, 65s. per oz. Anatolian, 30s. per oz.

Palma Rosa Oil.—12s. per lb.

Peppermint Oil.—Wayne County, 75s. per lb. Japanese, 9s. 6d. per lb.

Petitgrain Oil.—9s. per lb.

Sandal Wood Oil.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, June 17, 1926.

CONDITIONS in the chemical industry are practically unchanged, but the demand on home trade account has noticeably improved. This, however, is probably owing to the fact that with the present emergency services delays in transit are unpleasantly frequent, and probably buyers are somewhat anticipating their requirements. Prices with one or two exceptions are without change. Export trade still continues flat and much of the business offering is at unacceptable figures.

General Chemicals

ACETONE is without change in value, but stocks continue light; price can be noted at £81 to £83 per ton.

ACID ACETIC.—Only a very moderate demand is reported and price is unchanged at £37 to £39 per ton for 80% technical and £1 per ton extra for pure.

ACID FORMIC.—On home trade account demand is somewhat small as can only be expected, but price is unchanged; for export, however, in demijohns, the price has been advanced £2 per ton to all destinations.

ACID LACTIC is unchanged in value with a very moderate inquiry; price is £43 per ton for 50% by weight.

ACID OXALIC is still a very disappointing article, with price steady at 3¾d. per lb.

ACID TARTARIC.—The seasonal demand continues and the price is firm at 11½d. per lb.

ALUMINA SULPHATE.—Competition appears to be keenly in evidence, but nominally the price is unchanged at from £5 15s. to £6 per ton for the 17-18% quality.

AMMONIUM CHLORIDE is disappointing and only a small business is being transacted; price is unchanged at £18 to £19 per ton.

ARSENIC.—There is no improvement to report and business has been done on the parity of £13 10s. to £14 per ton.

BARIUM CHLORIDE moves fairly slowly and is quoted at about £10 per ton.

EPSOM SALTS.—Moderately active at £5 12s. 6d. per ton.

FORMALDEHYDE.—The improvement noted in our last issue continues and price is steady at £41 per ton.

IRON SULPHATE remains in extremely short supply and many export demands cannot be met.

LEAD ACETATE continues active and the article now has an upward tendency of £45 to £45 10s. per ton, with the brown at £43 per ton.

METHYL ALCOHOL.—Unchanged.

METHYL ACETONE.—Inactive and price is quoted at from £56 to £57 per ton.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged.

POTASSIUM CHLORATE is fairly firm and a moderate business is reported at about 3½d. per lb.

POTASSIUM PERMANGANATE is only a small market and the material is quoted at 7¾d. per lb.

POTASSIUM PRUSSIATE is firmer and also in better demand, and is now quoted at from 7d. to 7½d. per lb.

SODIUM ACETATE continues extremely firm for all positions, although the demand has not been quite so active; price is firm at about £20 to £21 per ton.

SODIUM BICHROMATE.—Foreign makers are now competing strongly for any considerable business that is passing, but British makers' prices are unchanged.

SODIUM NITRITE.—Unchanged at £20 10s. per ton to £21 per ton, with a small demand.

SODIUM PHOSPHATE is firm at £13 10s. per ton, and is in quietly steady request.

SODIUM PRUSSIATE.—A fair business is reported and the material continues quietly steady at 3¾d. to 4d. per lb.

SODIUM SULPHIDE continues slow of sale and export business is keenly competed for.

ZINC SULPHATE is in moderately active request at £14 per ton.

Coal Tar Products

Owing to the continuance of the coal strike, prices quoted are in all cases more or less nominal.

90's BENZOL, delivery of which is practically impossible, is quoted at 2s. 2d. per gallon, and it is doubtful whether any supplies are available, even at this figure.

PURE BENZOL is practically unobtainable, even at 2s. 6d. per gallon.

CREOSOTE OIL is firm at 6¾d. per gallon on rails in the provinces, but no supplies are available for spot delivery, while the price in London for spot parcels is in the region of 7½d. per gallon at maker's works.

CRESYLIC ACID is in good demand, especially the pale quality 97/99%. This is fully worth 2s. 3d. per gallon on rails, while the dark quality 95/97% is quoted at 1s. 11d. to 2s. per gallon on rails.

SOLVENT NAPHTHA.—Practically no supplies are available; 1s. 9½d. per gallon is being paid on rails at makers' works.

HEAVY NAPHTHA shows good improvement, and is worth 1s. 4d. per gallon on rails; a few small parcels are still available.

NAPHTHALENES show a slight revival, especially in the higher grades. 76/78 quality is worth about £6 10s., and 74/76 quality about £5 10s. at maker's works.

PITCH is dull, prices are unchanged and are more or less nominal at 70s to 75s. per ton f.o.b. U.K. ports.

Latest Oil Prices

LONDON.—LINSEED OIL strong and active at 17s. 6d. to 20s. advance. Spot, ex mill, £34 10s.; June, £33 7s. 6d.; July-August, £33 10s.; September-December, £33 15s.; and January-April, £34 7s. 6d. RAPE OIL nominal. Crude, extracted, spot, £49; and technical, refined, £51. COTTON OIL firm and occasionally 10s. higher. Refined common edible, £46; Egyptian, crude, £41 10s.; deodorised, £48. TURPENTINE firm but quiet at 3d. advance. American, spot, 70s.; June, 68s. 9d.; and July-December, 60s. 9d. per cwt.

HULL.—LINSEED OIL.—Spot and June, £33 5s.; July-August, £33 7s. 6d.; September-December, £33 10s.; and January-April, £33 10s. COTTON OIL.—Bombay crude, £37 10s.; Egyptian crude, £41; edible refined, £44 10s.; and technical, £41 10s. PALM KERNEL OIL, crushed naked, 5½ per cent., £44 10s. GROUNDNUT OIL, crushed/extracted, £47; and deodorised, £51. SOYA OIL, extracted and crushed, £37 10s. RAPE OIL, crushed/extracted, £48 10s.; and deodorised, £50 10s. per ton. CASTOR OIL, pharmaceutical, in barrels, 50s. to 51s.; firsts, 45s. to 46s.; and seconds, 42s. to 43s. COD OIL, 29s., in barrels, per cwt.

Nitrogen Products

ON account of the coal stoppage and the consequent reduction of British production, British sales now play only a minor part in the export market for sulphate of ammonia. The small quantities available are being disposed of on the basis of £10 15s. per ton f.o.b. U.K. port. Continental sellers are disposing of considerable quantities at prices equal to and sometimes a little below this price. It is reported that since the reduction in prices, some of the large continental producers have made considerable sales for delivery until the end of the year.

Home.—There is no change in the home position. Producers are still selling at the March/May price, and small orders continue to come in. It is expected that new summer prices will be announced shortly.

Nitrate of Soda.—There is a lull in the nitrate market; the producers' association are negotiating with the Chilean Government for a reduction in the export tax on nitrate. Should their efforts be successful, it appears likely that the new price scale will be subjected to further reduction. Under these circumstances, buyers are holding off. The stocks of nitrate are very large, not only in Chile, but in Europe and Egypt. There seems, therefore, no reason for an early revival of interest.

Storage Battery Locomotive Competition

THE Electric Storage Battery Locomotive Competition, held under the auspices of the Mines Department, for which a prize of £1,000 was offered by Mr. Charles Markham, has been won by Joseph Booth and Brothers, Ltd., engineers and crane manufacturers, of Radley, Leeds. A pamphlet, entitled "Electric Storage Battery Locomotive Battery Competition" (price 1s. 3d.), gives the report of the judges nominated to prepare a specification and to adjudicate upon the entries received. In addition to the entry which finally received the prize, the following entrants were asked to build and deliver for tests and adjudication locomotives agreeing in all essential particulars with the drawings and specifications submitted by them: Metropolitan-Vickers Electrical Co., Ltd., Manchester; Hawthorn Leslie and Co., Ltd., Newcastle-on-Tyne; Thos. Broadbent and Sons, Ltd., Huddersfield; and R. H. Patterson and Co., Ltd., Newcastle.

THE SHOWER-PROOFING OF ARTIFICIAL SILK is said to have been effected. A new stocking has been placed upon the market, made from artificial silk treated by a patented process, which prevents mud or water from adhering.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, June 16, 1926.

THE continuance of the coal strike is now interfering with business to a marked extent, and although most of the large producers are still able to maintain delivery they are being handicapped by lack of transport facilities. Prices with the exception of coal tar derivatives are fairly steady. Continental offers also show little or no change in price.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In little demand and price unchanged at 4¾d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Still in good demand and price firm at about 1s. 3½d. per lb., less 5%, ex store. Quoted 1s. 3¼d. per lb., less 5%, ex wharf, early delivery.

ACID FORMIC, 85%.—Unchanged at about £50 per ton, ex wharf, prompt delivery. On offer from the continent at £49 per ton, c.i.f. U.K. ports.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand, and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—In moderate demand. Quoted 3⅝d. per lb., ex store. Offered from the continent at about 3⅜d. per lb., c.i.f. U.K. ports.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In good demand and price unchanged at about 11¼d. per lb., less 5%, ex wharf. Offered to come forward at about the same figure.

ALUMINA SULPHATE, 17/18%, IRON FREE.—On offer from the continent at about £5 8s. 6d. per ton c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.

ALUM, LUMP POTASH.—Spot material on offer at £9 5s. per ton, ex store. Quoted £7 17s. 6d. per ton, c.i.f. U.K. ports. Crystal powder on offer at about £7 12s. 6d. per ton, c.i.f. U.K. ports. Spot material, £8 10s. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture. Quoted £18 5s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED CORNISH.—Spot material quoted £16 5s. per ton, ex store. Offered for early delivery at about £15 15s. per ton, ex store.

BARIUM CHLORIDE, 98/100%.—Quoted £8 15s. per ton, c.i.f. U.K. ports. Prompt shipment from the continent. Spot material on offer at about £10 10s. per ton, ex store.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station. Contract 20s. per ton less. Continental on offer at about £7 10s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental on offer at about £3 17s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—In moderate demand for export. Quoted £3 17s. 6d. per ton, c.i.f. U.K. ports. On offer for home consumption at about £3 10s. per ton, f.o.r. works.

COPPER SULPHATE 99/100%.—Good inquiry for export. English material quoted £23 5s. per ton, f.o.b. U.K. ports. Continental on offer at about £22 5s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Now quoted £37 per ton, c.i.f. U.K. ports, prompt shipment. Spot material on offer at £39 10s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £36 15s. per ton, ex store.

LEAD, WHITE.—£38 per ton, ex store.

LEAD, ACETATE.—Quoted £44 5s. per ton, c.i.f. U.K. ports, prompt shipment from the continent. Brown, about £38 15s. per ton, c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality, quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered, £27 per ton, c.i.f. U.K. ports, prompt shipment.

POTASSIUM NITRATE (SALTPETRE).—On offer from the continent at about £22 5s. per ton, c.i.f. U.K. ports, spot material, available at £24 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb., ex store, spot delivery. To come forward 7d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Quoted 7½d. per lb., ex wharf, early delivery. Spot material on offer at 7¼d. per lb., ex store.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton. Broken, 60%, £16 12s. 6d. per ton; powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Quoted £20 10s. per ton, ex store, spot delivery. English material on offer at about £22 per ton, ex station. Continental to come forward quoted £19 15s. per c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more (alkali 58%), £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE OF SODA.—Large crystals of English manufacture quoted £9 per ton, ex store, minimum 4 ton lots; pea crystals, £14 10s. per ton, ex station. Continental on offer at about £7 12s. 6d. per ton c.i.f. U.K. ports.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Spot material quoted 4½d. per lb., ex store. Offered for early delivery at 4d. per lb., ex wharf.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K., minimum 5 ton lots with slight reduction for contracts; 60/62% solid quality offered from the continent at about £9 15s. per ton c.i.f. U.K. ports. Broken, 15s. per ton more; crystals, 30/32%, £7 per ton c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American, £9 per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 96/98% quoted £23 15s. per ton f.o.b. U.K. port; 98/100% solid on offer from the continent at about £21 15s. per ton c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

ANALINE OIL AND SALT.—7d. per lb. Fair inquiries.

ORTHONITRANILINE.—5s. 9d. per lb. Some inquiries.

H. ACID.—3s. 3d. per lb. Fair home inquiries.

BENZALDEHYDE.—2s. 1½d. per lb. Some home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, June 17, 1926.

What business is being done on the Manchester chemical market at present is chiefly in small parcels for prompt or early delivery, although there is a certain amount of inquiry about for forward. The mining stoppage is having serious effects both on the consuming and producing sides of the chemical trade and imports of Continental fuel for use in the chemical works of Lancashire and Cheshire are being made through Liverpool and Manchester. In spite of the quiet demand for most lines prices are keeping quite steady in almost every section of the market.

Heavy Chemicals

Sulphide of sodium, as it has done for some time, continues to sell slowly but prices are about as they were, commercial being quoted at £8 15s. to £9 per ton and 60-65 per cent. concentrated solid at £10 10s. A quiet business is passing in hyposulphite of soda at round £14 10s. per ton for the photographic and £9 5s. per ton the commercial quality. A fair inquiry for alkali is reported at steady prices, 58 per cent. material offering at £6 15s. per ton. Saltcake is steady at about £3 5s. per ton, with demand on the quiet side. There is not much movement in the case of glauber salts, which are quoted at round £3 10s. per ton. Because of continued short supplies acetate of soda is very firm and up to £21 per ton is being asked. Caustic soda shows no change so far as prices are concerned, these ranging from £17 10s. per ton for 76 per cent. down to £15 2s. 6d. for 60 per cent. strength, with a quietly steady business being done. Phosphate of soda is steadier at about £12 10s. per ton, but sales continue rather slow. Bichromate of soda is well held at about 3½d. per lb., although there is not a great deal of trade reported in this at present. The demand for bicarbonate is on a restricted scale, but quotations are held at £10 10s. per ton. Bleaching powder is still on offer at about £8 10s. per ton. Chlorate of soda is steady and in moderate request at 3¼d. per lb.

Permanganate of potash is held at 7d. to 7¼d. per lb. for pharmaceutical and 5¼d. for commercial, with sales moderate. The demand for yellow prussiate of potash is confined within rather narrow limits at 7d. per lb.; or possibly slightly below this figure. Caustic potash keeps up at about £27 per ton for 90 per cent., with carbonate offering at £26 to £26 10s., but in both instances sales are moderate at the moment. Chlorate of potash is on the slow side although quotations are steady at round 4d. per lb. Bichromate of potash is firm at about 4¼d. per lb.

The demand for arsenic shows no sign of expansion but the price is steadier at about £13 15s. per ton, on rails, for white powdered, Cornish makes. Sulphate of copper shows little change in price which ranges round £23 15s. per ton, f.o.b.; inquiry for export is still limited. Grey acetate of lime is unchanged at £15 10s. and brown at £7 15s., but demand is slow. Acetate of lead is well held at £45 to £46 per ton for white and £40 10s. for brown. Lead nitrate is also firm at round £41 per ton.

Acids and Tar Products

Tartaric acid keeps steady and in fair request at about 11½d. per lb. Citric acid is quoted at up to 1s. 3½d. per lb. and sales are moderate. Oxalic acid continues dull at about 3⅝d. per lb. Glacial acetic acid is still on offer at £66 to £67 per ton and commercial 80 per cent. at about £36 10s., a quiet demand for this material being experienced.

Among the coal-tar products, pitch continues very quiet so far as actual business is concerned, with prices nominal but firm at 80s. per ton, f.o.b. Carbolic acid also keeps very quiet at 4¾d. per lb. for crystals and 1s. 4¾d. per gallon for crude. Solvent naphtha is steady at up to 1s. 7d. per gallon, although there is not much inquiry for this at the present time. Creosote oil is firm at round 6¾d. per gallon.

The India Office states that the Government of India, with the concurrence of the Secretary of State, have now decided to fix ten years as the period within which the export of opium from India for other than strictly medical purposes will be progressively and finally extinguished. A 10 per cent. reduction of such exports will accordingly be made in 1927, so that the last export will take place in 1935.

Natural Salt Cake

Commercial Shipments from Canada

The High Commissioner for Canada in London has received from the Dominion Department of Mines the following statement by Mr. L. H. Cole, of the Mines Branch, dealing with the utilisation in Canada of natural salt cake produced from the alkaline lakes in the province of Saskatchewan :—

"In a previously published letter, Dr. A. W. G. Wilson, of the Mines Branch, Department of Mines, Ottawa, directed the attention of textile dyers to the manufacture of spray-dried salt cake now being produced in Western Canada, and particularly in the Province of Saskatchewan, from the large deposits of natural Glauber salt found in the alkaline lakes of that region. This product in its natural state is entirely free from acid and iron, a quality essential in salts used in the dyeing of woollen or cotton fabrics, and is much superior to the by-product recovered in the manufacture of muriatic acid.

"The deposit of Glauber salt from which the dehydrated material is prepared by the Spray-dryer process is located at Frederick Lake, thirty-eight miles south-west of Moose Jaw, Saskatchewan, and it is being worked by the Bishopric and Lent Company. Hydrous crystals harvested from the surface of the deposit are stored in a stock pile adjacent to the plant. In the plant natural crystals are dissolved, and the solution is filtered. The clarified and heated brine is then pumped to the top of a tower and sprayed through special nozzles. Hot gases from oil burners are admitted at the bottom of the tower and the finely atomised brine, falling through the rising gases, loses its water so that dehydrated sodium sulphate in the form of a fine powder is collected at the base of the tower, the percentage of moisture left in the product being regulated by the temperature of the rising gases.

"Two forms of salt cake are produced. The first, a white fluffy powder, containing less than one half per cent. of moisture and weighing approximately thirty pounds per cubic foot, is obtained directly from the drying tower. This material finds a ready market in the dye industry. The second product, a nodulised sodium sulphate, weighing around ninety pounds per cubic foot, is produced by partial spray drying followed by fusion in a rotary drier. This second product finds a market in kraft pulp mills.

"A survey of the lakes in Western Canada which contain beds of natural sodium sulphate has just been completed by the Mines Branch. It is estimated that there is a reserve in excess of one hundred million tons available for commercial development."

Canadian Nickel

The Canadian Natural Resources Intelligence Service at Ottawa reports that an important announcement respecting the future development of the nickel industry in the Sudbury district of Ontario, was made by Mr. J. L. Agnew, President of the International Nickel Co., who said that the development of the Frood Mine, situated one and a half miles from Sudbury, would commence on July 1 next, with a staff of 250 men which would be gradually increased until the peak production, for which hoisting equipment is to be provided, will engage from 1,800 to 2,500 workmen. The total expenditure called for is $8,000,000. An important paper on recent developments in the nickel industry was read by Mr. Paul D. Merica, Director of Research of the International Nickel Co., at the March annual general meeting of the Canadian Institute of Mining and Metallurgy. A copy of this paper can be consulted by engineers and others interested at the Natural Resources and Industrial Information Bureau, the Canadian Building, Trafalgar Square, London, S.W.1.

Cellulose Lacquer Colours

Discussing colours for use in motor car finishes, a writer in the U.S. *Journal of the Society of Automotive Engineers* says that the colours must be permanent, so that they will not fade in sunlight; insoluble in varnish or lacquer, so that they will not "bleed"; opaque, to produce a lustre; light in weight, to prevent settling out; and soft in texture, for easy grinding in varnish or lacquer. Among the few organic substances mentioned by the writer as available are toluidine bright red; helio Bordeaux maroon; a developed alizarine wine colour; and hansa yellow.

Company News

SHAWINIGAN WATER AND POWER CO.—The quarterly dividend of $2 per share on the common stock is payable on July 10.

CHLORIDE ELECTRICAL STORAGE CO.—A final dividend of 5 per cent. actual, tax free, making 10 per cent. for the year, is announced; also a bonus of 2s., tax free.

COURTAULDS, LTD.—The dividend on the 5 per cent. cumulative preference will be paid on July 1 to shareholders on the books at the close of business on June 10.

KEELEY SILVER MINES.—For the year ended February 28, the report states that the net surplus on that date was $708,516, an increase of $102,257.45 over the corresponding figures for the previous year.

UNITED INDIGO AND CHEMICAL CO.—The directors have decided that a dividend at the usual rate of 5 per cent. per annum, less tax, be paid on the preference shares for the six months ending June 30.

ESPERANZA COPPER AND SULPHUR CO.—A profit of £20,793 is shown for the year 1925, against £18,971 for 1924. The dividend is increased from 7½ per cent. to 8 per cent., less tax, and the carry forward from £7,755 to £8,548.

ROSARIO NITRATE CO.—The report for 1925 shows a net profit of £37,592, which, with £28,584 brought forward, makes £66,176. A final dividend of 2½ per cent., less tax, is recommended, making 7½ per cent. for the year, and £30,458 is carried forward.

TIMBER FIREPROOFING CO.—The net profits for the year ended March 31 last amounted to £5,199, which reduces the balance to debit of profit and loss to £10,407. The directors propose to reduce the capital from £250,000 to £100,000 by cancelling 12s. on each of the issued shares, the nominal value of the shares being reduced from £1 to 8s.

J. C. AND J. FIELD.—The report for the year ended March 31 last states that after providing for repairs and depreciation, the accounts for the year ended March 31 last show a credit balance of £22,614. The board recommend a dividend of 7 per cent. on the preference shares, less tax, and a dividend of 10 per cent. on the paid-up capital of the ordinary shares, less tax, carrying forward £7,040.

SHELL TRANSPORT AND TRADING CO.—The revenue accounts for 1925 show that, including the balance of £231,624 brought forward, there is a credit at profit and loss of £5,091,594. After payment of the dividends there remains a balance of £2,659,815, from which the directors recommend a final dividend of 2s. 6d. per share, tax free, on the ordinary, to be paid on July 5, making 22½ per cent. for the year, tax free.

BLEACHERS' ASSOCIATION, LTD.—After deducting all charges, debenture interest, and placing £200,000 to depreciation fund, there is an available balance for the year ended March 31, including £387,936 brought forward, of £1,152,907 (against £1,223,583 a year ago, including £371,885 brought forward). After providing for the preference dividend and interim dividend of 5 per cent. on the ordinary shares, the directors recommend a final dividend on the ordinary shares of 9¾ per cent., placing £172,651 to general reserve, and £75,083 to superannuation fund, leaving £294,969 to be carried forward.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICALS, DRUGS, ETC.—A European firm of merchants and manufacturers' representatives in Calcutta desires to secure additional representation. (Reference No. 797).

TAR, OILS, AND PAINTS.—A manufacturers' agent, in East London, representing South African houses for by-products of coal tar, desires to represent on a commission basis British manufacturers of tar, oils, and paints in South Africa. (Reference No. 803.)

Tariff Changes

BARBADOS.—The Dangerous Drugs Act (No. 7 of 1926) will come into force on a day notified by Proclamation, and will regulate the importation, exportation, manufacture and sale of opium and other dangerous drugs. Besides prohibiting the import and export from the Colony of prepared opium, the Proclamation prohibits, except under licence, the importation and exportation of the following drugs:—Raw opium, coca leaves, Indian hemp or resins obtained therefrom, or any preparation of which such resins form the base; morphine, cocaine (including synthetic cocaine), ecgonine, diacetyl morphine (commonly known as diamorphine and heroin), and their respective salts, medicinal opium, and any extract or tincture of Indian hemp, and any preparation, admixture, extract or other substance containing any proportion of diacetyl morphine or containing not less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine or ecgonine.

EGYPT.—Tariff valuations have been fixed by the Egyptian Government for assessing the Customs duties on non-ferrous metals, and will take effect from May 1 to July 31, or until denunciation.

CZECHOSLOVAKIA.—An announcement by the Ministry of Commerce shows that the following chemicals, etc., may now be imported without import licences:—Lignite, coal, coke and all hard artificial combustible materials prepared from these substances, manganese dioxide, oxalic acid, zinc (white and grey), liquefied carbonic acid, chloride of lime, etc.

FRANCE.—A Presidential Decree dated for June 3 provides that modifications in the tax on pharmaceutical specialities are to come in force on July 1, next.

ITALY.—Under the conditions of a Decree Law of May 6, the duty-free importation of spirit of turpentine into Italy for making synthetic camphor, under conditions to be laid down by the Minister of Finance, is provided.

LITHUANIA.—An order has been issued, as from June 5, imposing an additional duty of 30 per cent. on all goods imported from countries which have not yet concluded commercial agreements with Lithuania. As foreshadowed in last week's CHEMICAL AGE, certificates of origin issued by British Chambers of Commerce will be required, although original bills of lading certified by British Customs Houses will be regarded as sufficient for goods imported from Great Britain.

ROUMANIA.—A Law of March 26, provides for the increase of Customs duties on imported metallurgical goods.

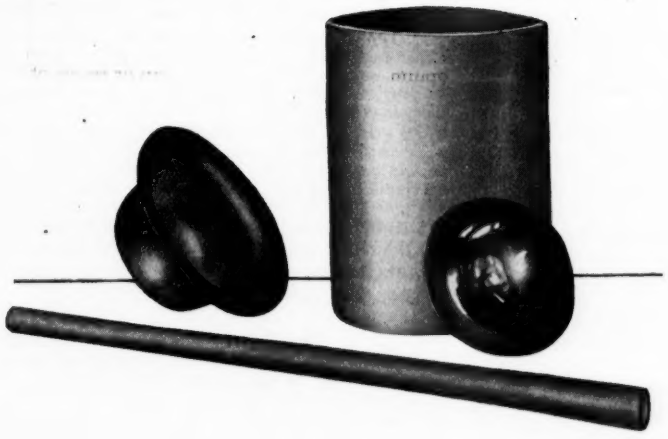
JAPAN.—In connection with the passage of the recent Japanese Tariff Revision Bill through the Diet, a committee is to be appointed to conduct a further investigation into certain items of the Tariff, and to investigate and submit proposals concerning oxide of cobalt, including asbolite, formalin, and various silks, etc. The duty on saccharine and similar sweetening substances is also altered to 60 yen per kin.

Power Alcohol in East Africa

AT the fifth annual general meeting of the Empire Cotton Growing Corporation, on Wednesday, June 9, it was stated in the report of the administrative council that the committee had continued their investigations into the possibilities of producer gas. A conference had been held with Dr. W. R. Ormandy and Colonel Franklin, Trade Commissioner for East Africa, regarding the possibilities of producing power alcohol in bulk in Uganda. Colonel Franklin was now in East Africa, investigating further the question whether the local sugar factories could economically undertake the manufacture of power alcohol from molasses.

Stainless Iron

DURING the recent conference of the Institution of Water Engineers, in Manchester, Dr. Barclay referred to the great possibilities of stainless or rustless iron. The discovery, he said, was about six years old. The substance had the advantage over stainless steel of having its special properties in the soft state, whereas the steel was hardened and tempered. The metal is already being used for the bright parts of motor cars and for pumps. It is dearer than ordinary steel but cheaper than stainless steel. Already, stainless iron pots and pans are within the reach of many people's purses and any reduction in the cost might have very important results.



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* * *

FIRTH "STAYBRITE" SILVER STEEL

combines the qualities of resistance to atmospheric influence, moisture, sea water, many acids (including nitric), vinegar, and many organic agents with ease in manipulation.

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FIRTH "STAYBRITE," with a yield point of about 15 tons per sq. in. and an elongation of 55% to 70% has exceptional ductility, combined with maximum corrosion resisting qualities.

It may be cold pressed to a degree far in advance of the so-called "Stainless Iron," and, moreover, presents no difficulties in manipulation, since it may be welded, brazed, soldered and riveted without trouble.

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SHEFFIELD

W. J. Bush and Co.

Severity of Fine Chemical Competition

THE annual general meeting of the shareholders of W. J. Bush and Co., Ltd., was held on Tuesday. Mr. J. M. Bush (chairman and managing director), who presided, said that apart from the loss incurred through the fire at their Widnes works in July, their profit had been adversely affected by the unsettled industrial conditions in many countries of the world and also by the severity of competition in a number of the fine chemicals they manufactured. Prohibitive tariffs, political disturbances, and depreciated and fluctuating foreign currencies had each played their part. Increased tariff duties were likely to inflict permanent injury on their foreign trade. Time would probably find a solution of political and currency troubles, but they had to rely solely upon themselves to meet competition successfully. In this connection they had made satisfactory progress in improving the efficiency of their processes and plant during the year. In the restoration of their Widnes works they had been able to effect considerable improvements in the lay-out of their plant, which would assist in lowering the cost of production of the chemicals manufactured there. They had had the opportunity of acquiring the long leasehold of these works, and had also contracted to purchase the freehold. The advantage of so doing was that all expenditure on plant would be on their own property. Their subsidiary companies—W. J. Bush and Co., Inc., of New York, and W. J. Bush and Co. (Canada), Ltd., of Montreal—showed steady improvement in turnover and profits, which from the figures available appeared to be continuing during the current year.

The accounts were adopted and Dr. P. C. C. Isherwood was re-elected a director.

A shareholder, in proposing a vote of thanks to the chairman, directors, and staff, expressed warm appreciation of their services, and said that, having regard to the difficulties through which industries generally were passing, the shareholders were to be congratulated upon having such a satisfactory balance-sheet. The chairman, on behalf of the board and the staff, thanked the shareholders for this expression of their appreciation. The company had the most loyal staff that any firm could wish to have, and the directors would do everything possible to maintain the excellent relations which had existed for so many years past.

Mine Production of Crude Platinum

THE total production of crude platinum in the United States in 1925 was 343 ounces, according to reports from mine operators compiled by Mr. James M. Hill, Bureau of Mines, Department of Commerce. This output is more by 92 ounces than the purchases by refiners reported in a recent statement by the Bureau of Mines. Mine operators in California in 1925 produced 312 ounces of crude platinum, which was sold for $36,000, or $115 an ounce, and 19 ounces of crude platinum was produced in Oregon and sold for $2,100, or $111 an ounce. The United States Geological Survey has informed the Bureau of Mines that over 12 ounces of crude platinum was reported produced by Alaska mines in 1925.

Butyric Acid from Sawdust

A FRENCH company, known as the Ketol Co., is increasing its capital to over 33,000,000f., with the object of manufacturing butyric acid from sawdust on a large commercial scale. It is reported that 15kg. of butyric acid can be obtained from 100 kg. of sawdust by the latest process adopted by the company. At a price of 30f. per kilogram for butyric acid, the process should, therefore, yield a very large profit. In addition to its use in the tanning industries, butyric acid can be used for the preparation of cellulose butyrate, which is said to provide an even better base for artificial silk than the well-known cellulose acetate process.

THE ACTING PRESIDENT of the Carnegie Institute of Technology, Dr. Thomas Stockham Baker, has sailed for Europe to invite English, French, and German scientists to attend a conference on bituminous coal under the auspices of the Institute at Pittsburg in November. The conference is to consider new uses for coal and substitutes for motor fuel.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BISSELL, Mr. S. S. J. (trading as WOODBROOK DRUG CO.), Vale Place, Merridale Street, Wolverhampton, chemists' manufacturers. (C.C., 19/6/26.) £17 5s., March 5, and £10 8s. 6d., April 29.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

MORTONS (CASH CHEMISTS), LTD., London, W.C. (M., 19/6/26.) Registered June 2, £4,000 debentures, balance of £20,000; general charge. *£16,000. March 13, 1924.

TAYLOR'S DRUG CO., LTD., Leeds. (M., 19/6/26.) Registered June 2, £1,500 mortgage, to Building Society; charged on 204, Manningham Lane, Bradford; also registered June 4, £1,000 mortgage, to S. Dixon, Woodnook Farm, Adel-cum-Eccup, farmer; charged on 5, Town Street, Stanningley. *£138,567 4s. 6d. November 9, 1925.

New Companies Registered

BARNOLD, LTD. Registered June 12, 1926. Research, manufacturing and general chemists, etc. Nominal capital, £2,500 in 1,500 8 per cent. participating non-cumulative preference shares of £1 each and 20,000 deferred shares of 1s. each. A director: W. J. Bartholomew, 7, Milverton Street, Kennington, S.E.11.

BRITISH CARBONISED FUELS, LTD., Palmerston Buildings, 5, Manor Row, Bradford. Registered June 5, 1926. Manufacturers of coke, smokeless fuel and briquettes, fuel oil, chemicals and explosives. Nominal capital, £5,000 in £1 shares.

CANDLES (DUTCH EAST INDIES), LTD., 22, Great St. Helens, London, E.C.3. Registered June 14, 1926. Producers, manufacturers of and dealers in candles, oils, greases, glycerine, soap, etc. Nominal capital, £10,000 in £1 shares.

LEONA, LTD., 181, High Street, Blackheath, Staffs. Registered June 7, 1926. Wholesale manufacturing chemists, perfumers, soap makers, etc. Nominal capital, £2,000 in £1 shares.

MIDLOTHIAN CHEMICAL CO., LTD., 70, Mountainblue Street, Glasgow. Registered in Edinburgh June 5, 1926. Manufacturers of and dealers in chemical and natural fertilisers of all kinds, fish manures, guanos, sulphate of ammonia, etc. Nominal capital, £1,000 in £1 shares.

JOHN MILLER AND CO. (ABERDEEN), LTD., Sandilands Chemical Works, Aberdeen. Registered in Edinburgh June 7, 1926. Chemical manufacturers. Nominal capital, £175,000 in £10 shares.

WESTERN TAR SPRAYING CO., LTD., 20, Wind Street, Swansea. Registered June 11, 1926. Tar sprayers; manufacturers of and dealers in tar, petroleum products, oil and grease, etc. Nominal capital, £2,000 in £1 shares.